

# TRANSPORTATION

**luggage rack**

Support at the rear of the vehicle, for attaching a trunk or for lashing down luggage using straps.

**seat**

Usually leather seat where the driver sits.

**mirror**

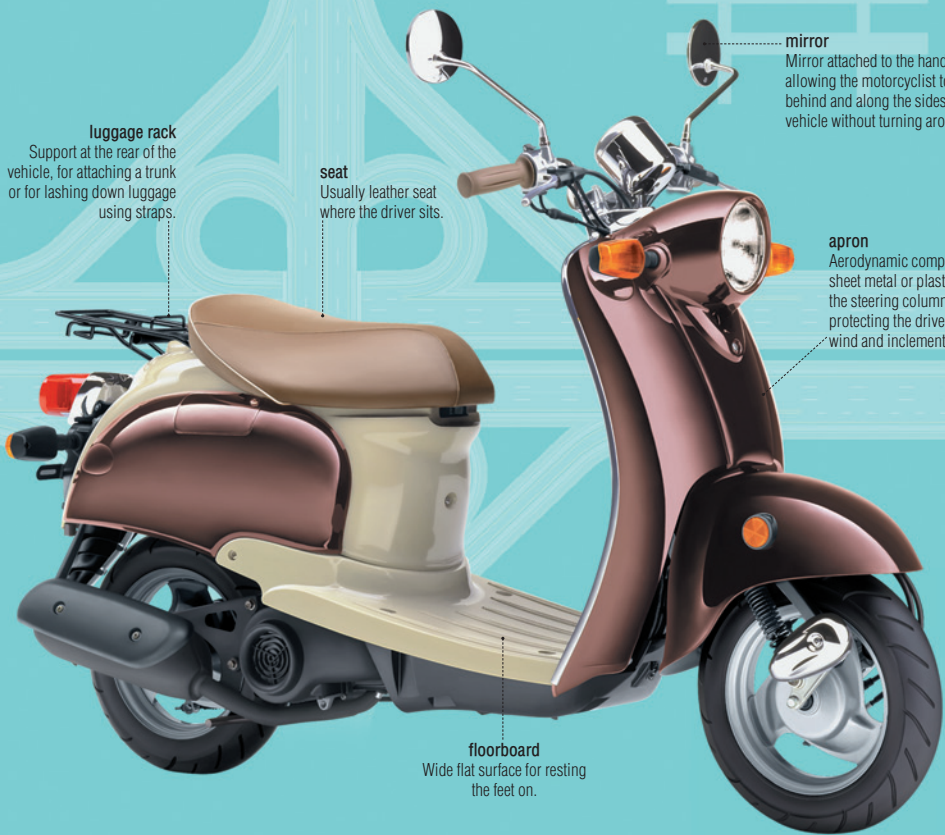
Mirror attached to the handgrip, allowing the motorcyclist to see behind and along the sides of the vehicle without turning around.

**apron**

Aerodynamic component in sheet metal or plastic, trimming the steering column and protecting the driver from the wind and inclement weather.

**floorboard**

Wide flat surface for resting the feet on.



# TRANSPORTATION

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# INTRODUCTION

## EDITORIAL POLICY

*The Visual Dictionary* takes an inventory of the physical environment of a person who is part of today's technological age and who knows and uses a large number of specialized terms in a wide variety of fields.

Designed for the general public, it responds to the needs of anyone seeking the precise, correct terms for a wide range of personal or professional reasons: finding an unknown term, checking the meaning of a word, translation, advertising, teaching material, etc.

The target user has guided the choice of contents for *The Visual Dictionary*, which aims to bring together in 12 thematic books the technical terms required to express the contemporary world, in the specialized fields that shape our daily experience.

## STRUCTURE

Each tome has three sections: the preliminary pages, including the table of contents; the body of the text (i.e. the detailed treatment of the theme); the index.

Information is presented moving from the most abstract to the most concrete: sub-theme, title, subtitle, illustration, terminology.

## TERMINOLOGY

Each word in *The Visual Dictionary* has been carefully selected following examination of high-quality documentation, at the required level of specialization.

There may be cases where different terms are used to name the same item. In such instances, the word most frequently used by the most highly regarded authors has been chosen.

Words are usually referred to in the singular, even if the illustration shows a number of individual examples. The word designates the concept, not the actual illustration.

## DEFINITIONS

Within the hierarchical format of *The Visual Dictionary*'s presentation, the definitions fit together like a Russian doll. For example, the information within the definition for the term *insect* at the top of the page does not have to be repeated for each of the insects illustrated. Instead, the text concentrates on defining the distinguishing characteristics of each insect (the *louse* is a parasite, the female *yellow jacket* stings, and so forth).

Since the definition leaves out what is obvious from the illustration, the illustrations and definitions complement one another.

The vast majority of the terms in the *Visual Dictionary* are defined. Terms are not defined when the illustration makes the meaning absolutely clear, or when the illustration suggests the usual meaning of the word (for example, the numerous *handles*).

## METHODS OF CONSULTATION

Users may gain access to the contents of *The Visual Dictionary* in a variety of ways:

- From the TABLE OF CONTENTS at the end of the preliminary pages, the user can locate by title the section that is of interest.
- With the INDEX, the user can consult *The Visual Dictionary* from a word, so as to see what it corresponds to, or to verify accuracy by examining the illustration that depicts it.
- The most original aspect of *The Visual Dictionary* is the fact that the illustrations enable the user to find a word even if he or she only has a vague idea of what it is. The dictionary is unique in this feature, as consultation of any other dictionary requires the user first to know the word.

## TITLE

Its definition is found below. If the title refers to information that continues over several pages, after the first page it is shown in a shaded tone with no definition.

## TERM

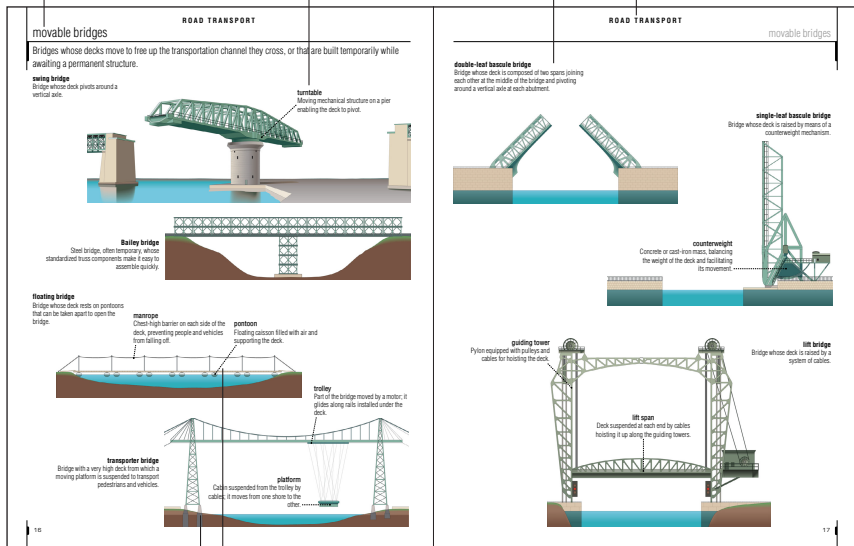
Each term appears in the index with a reference to the pages on which it appears.

## DEFINITION

It explains the inherent qualities, function, or characteristics of the element depicted in the illustration.

## SUB-THEME

These are shown at the end of the preliminary pages along with their definitions. They are then repeated on each page of a section, but without the definition.



## ILLUSTRATION

It is an integral part of the visual definition for each of the terms that refer to it.

## NARROW LINES

These link the word to the item indicated. Where too many lines would make reading difficult, they have been replaced by color codes with captions or, in rare cases, by numbers.

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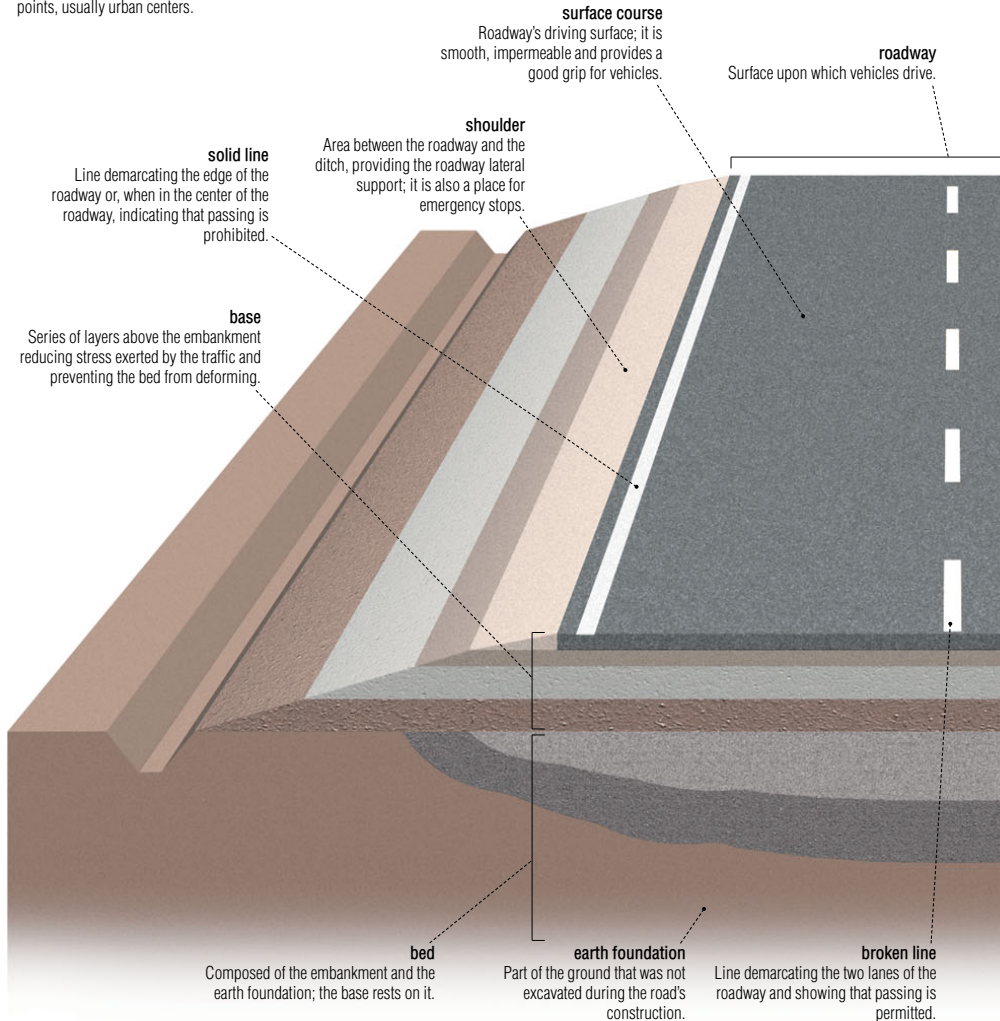


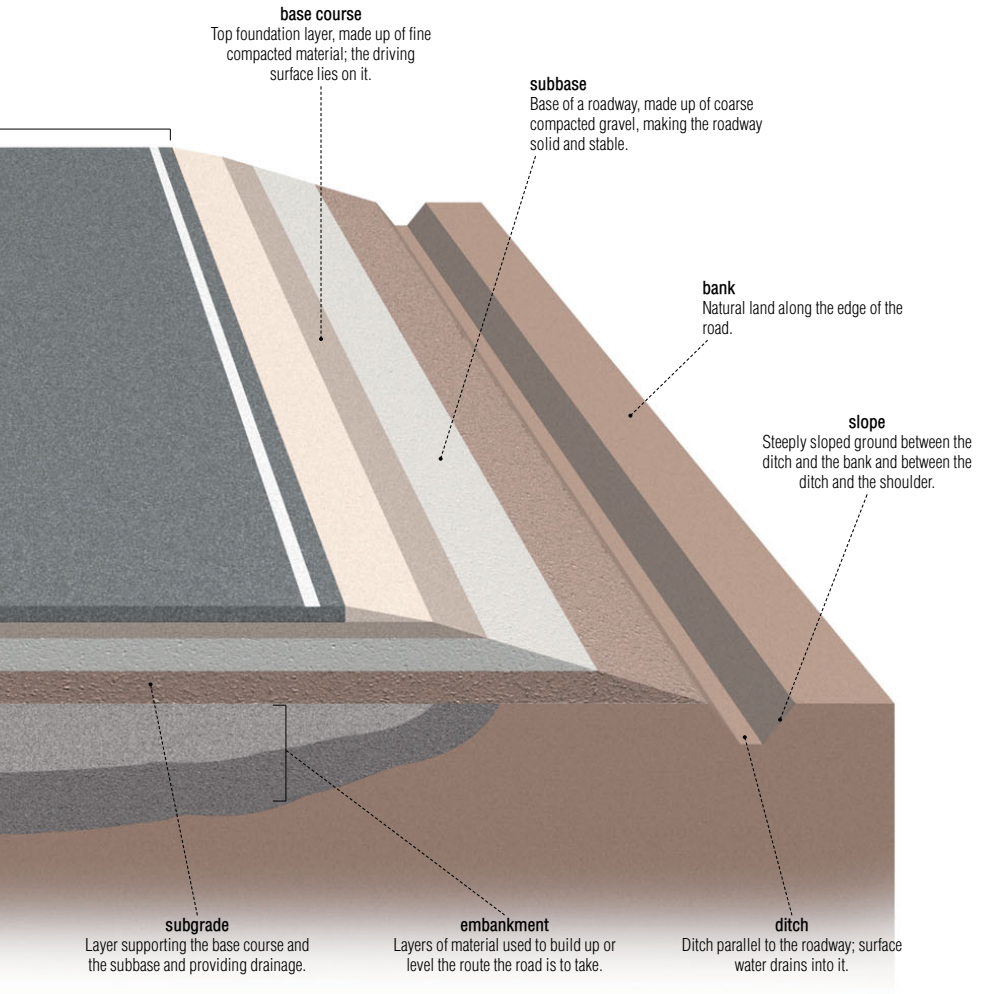
# road system

Network of thoroughfares providing for the flow of traffic.

## cross section of a road

Road: thoroughfare connecting two geographical points, usually urban centers.



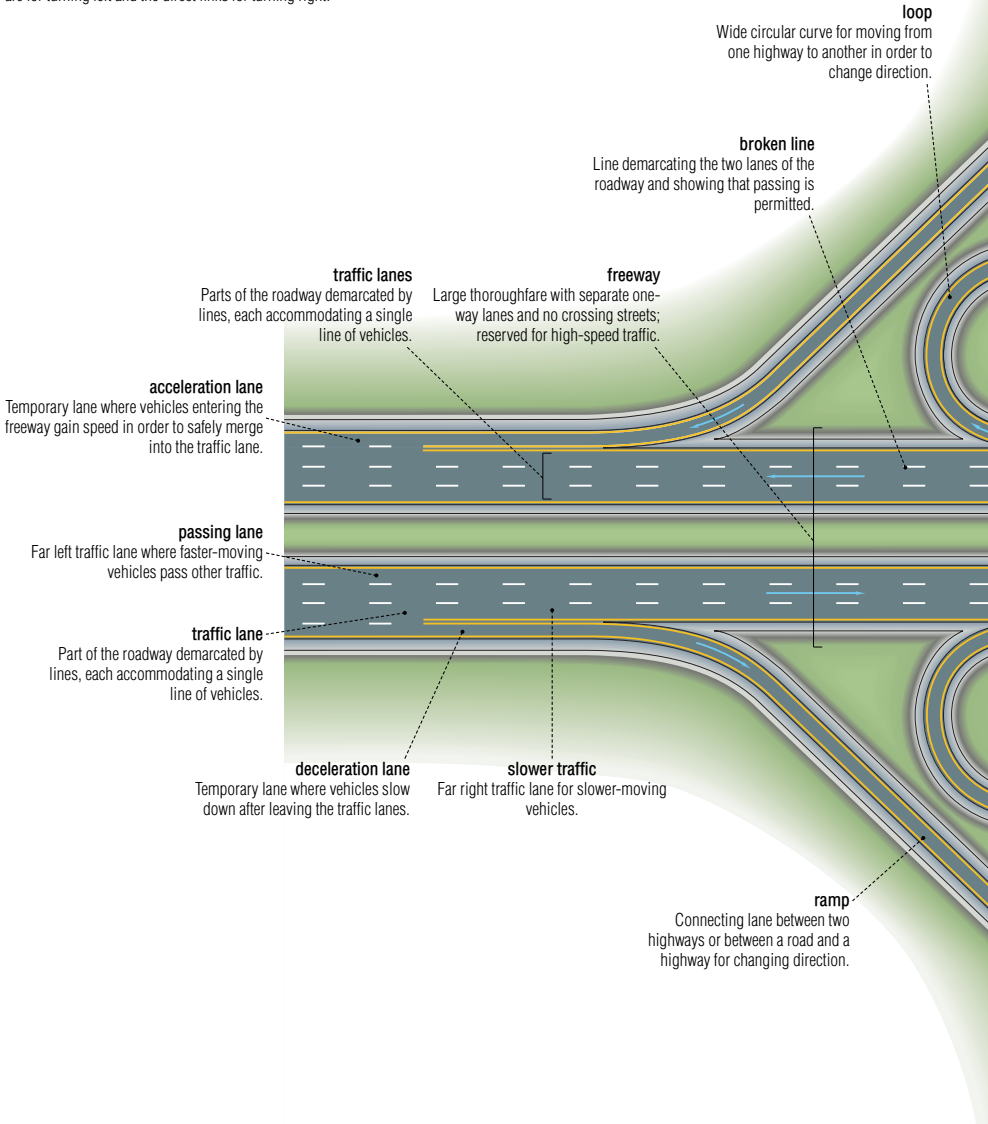


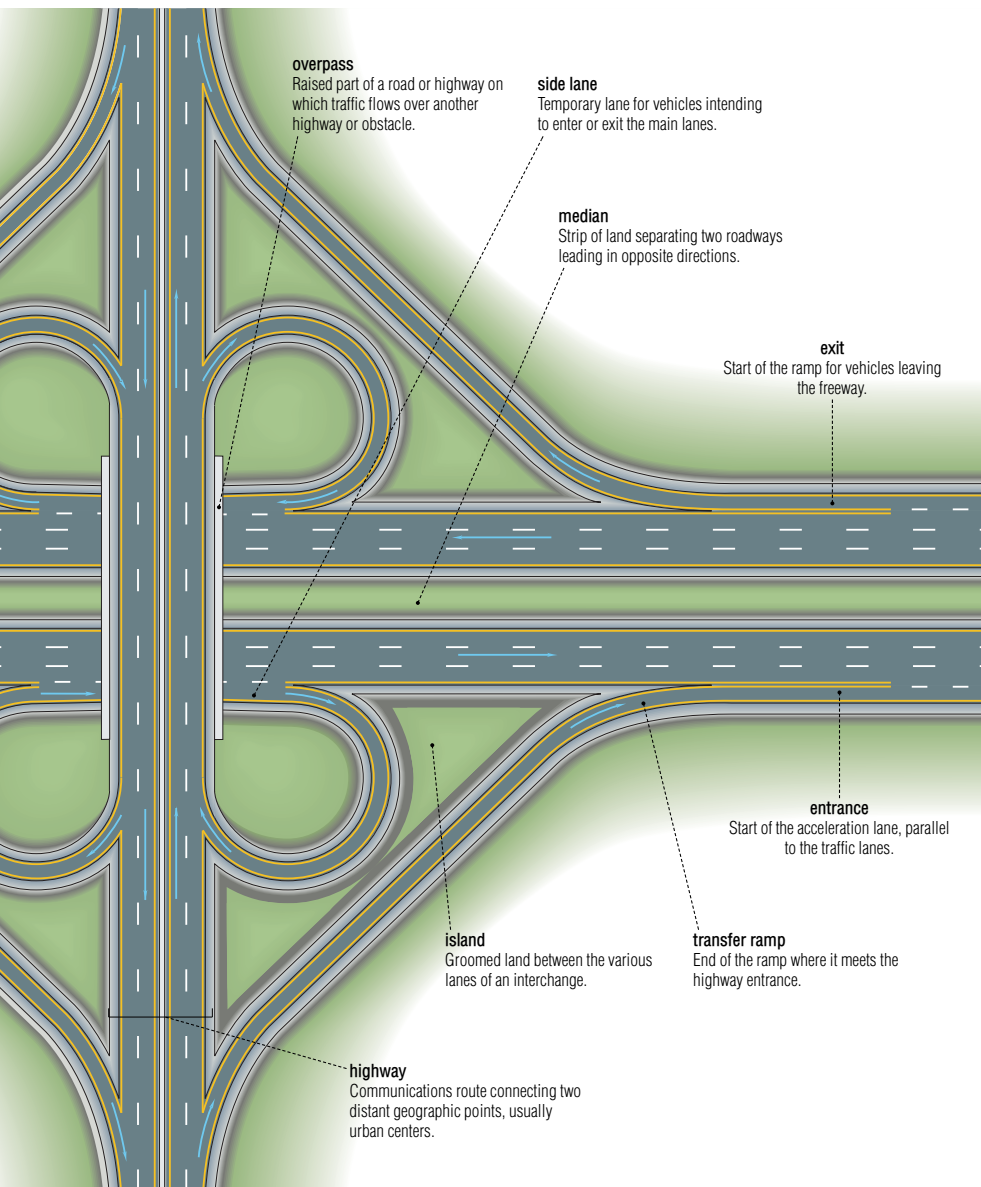


## road system

**cloverleaf**

Interchange with four branches where the inside loops are for turning left and the direct links for turning right.



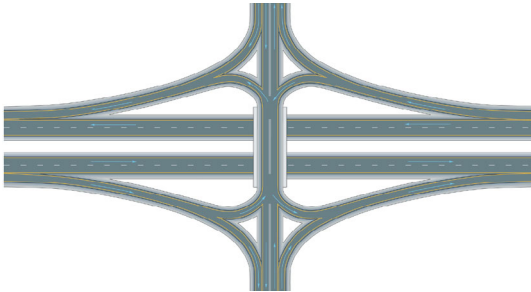


**examples of interchanges**

Interchange: structure linking roads or freeways so they do not intersect.

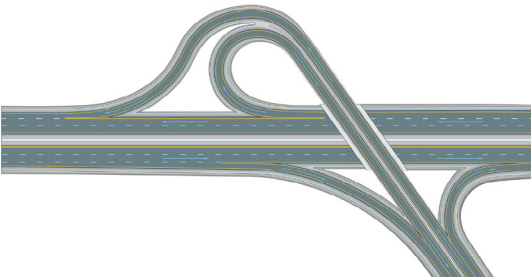
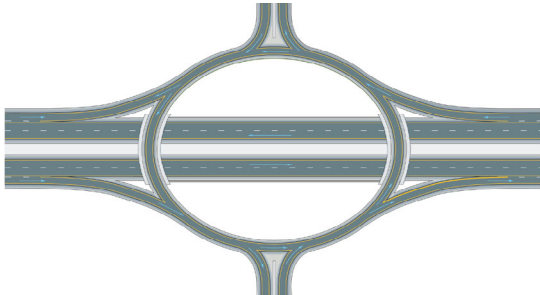
**cloverleaf**

Interchange with four branches where the inside loops are for turning left and the direct links for turning right.

**diamond interchange**

Interchange connecting a road and a freeway, requiring traffic lights for left turns onto and off the road or overpass.

**traffic circle**  
Interchange composed of four ramps joining each other to form a circular one-way thoroughfare.

**trumpet interchange**

Interchange connecting a road ending at a freeway, using only one loop.

Structures enabling traffic to clear an obstacle, such as a river, gorge or highway.

**beam bridge**

Bridge whose deck is composed of one or several beams, which are supported by piers across the open space.

**abutment**

A pier's point of support on firm ground.

**overpass**

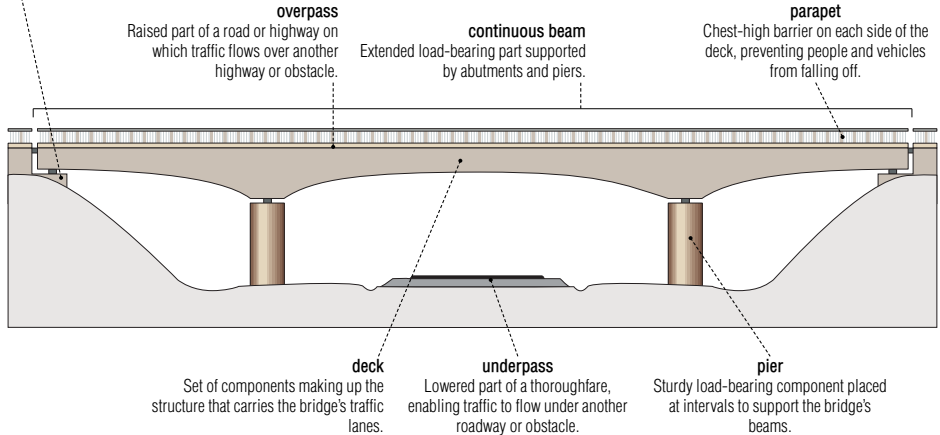
Raised part of a road or highway on which traffic flows over another highway or obstacle.

**continuous beam**

Extended load-bearing part supported by abutments and piers.

**parapet**

Chest-high barrier on each side of the deck, preventing people and vehicles from falling off.

**deck**

Set of components making up the structure that carries the bridge's traffic lanes.

**underpass**

Lowered part of a thoroughfare, enabling traffic to flow under another roadway or obstacle.

**pier**

Sturdy load-bearing component placed at intervals to support the bridge's beams.

**cantilever bridge**

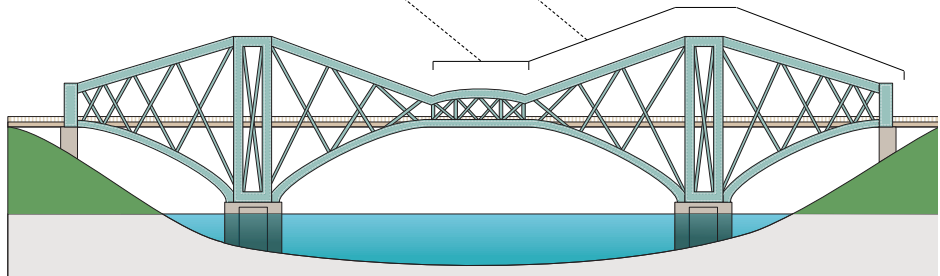
Bridge whose two main spans extend toward each other and support a short suspended span, which bears less load.

**cantilever span**

Span with a complex framework on each side of a central pillar; one end of the span rests on the ground and the other supports a suspended span.

**suspended span**

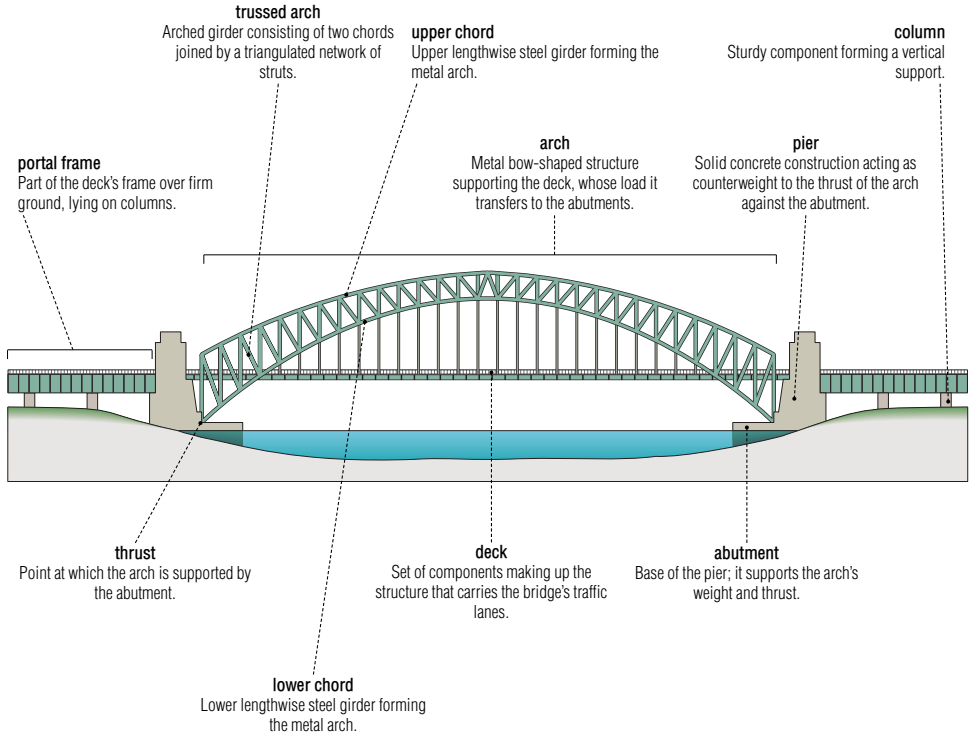
Short center span resting on the ends of the two cantilever spans.



## fixed bridges

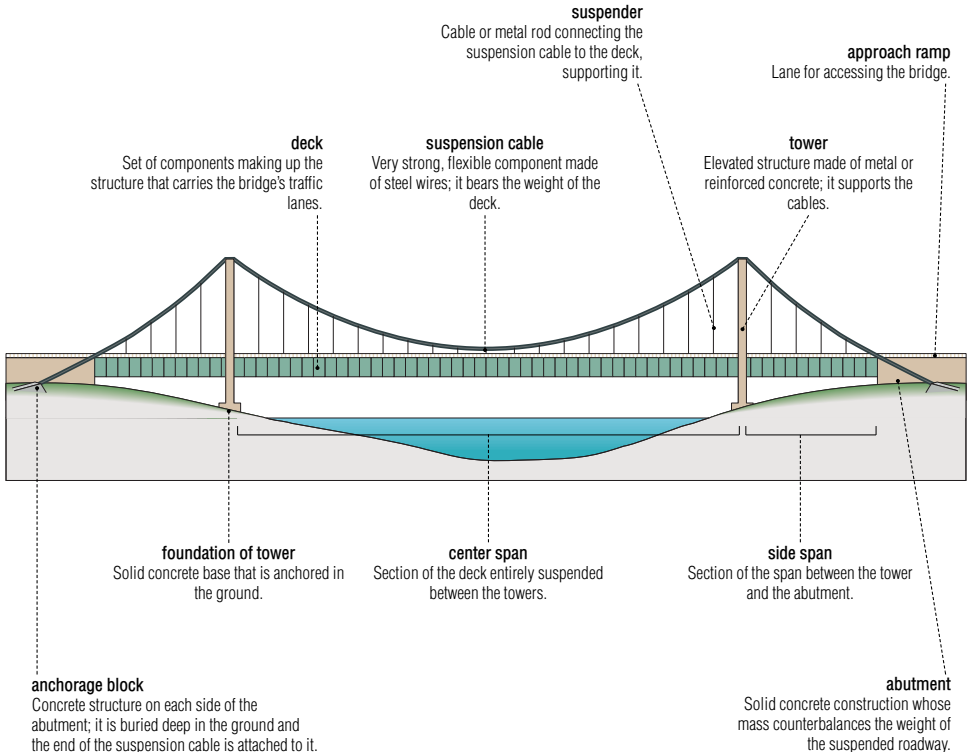
**arch bridge**

Bridge whose deck is supported by suspenders attached to an arch, which exerts diagonal thrust against the lateral supports.



**suspension bridge**

Bridge whose long deck is suspended from load-bearing cables, which are supported by the towers and anchored in the ground at both ends of the bridge.

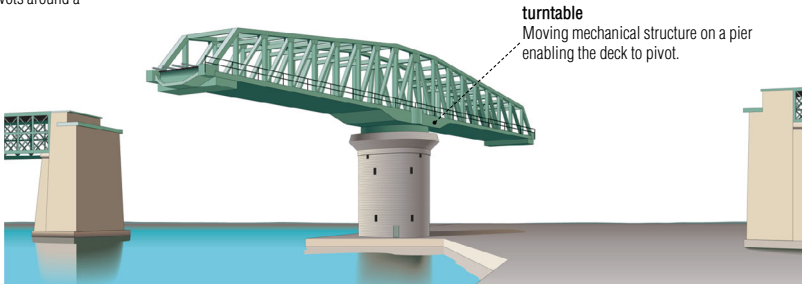


## movable bridges

Bridges whose decks move to free up the transportation channel they cross, or that are built temporarily while awaiting a permanent structure.

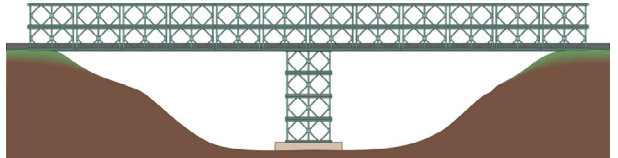
### swing bridge

Bridge whose deck pivots around a vertical axle.



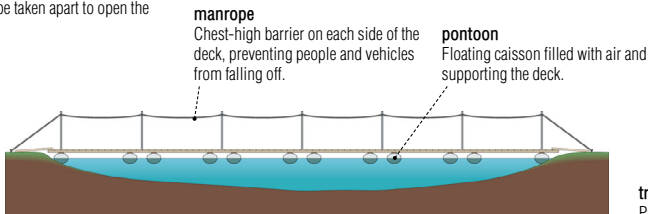
### Bailey bridge

Steel bridge, often temporary, whose standardized truss components make it easy to assemble quickly.



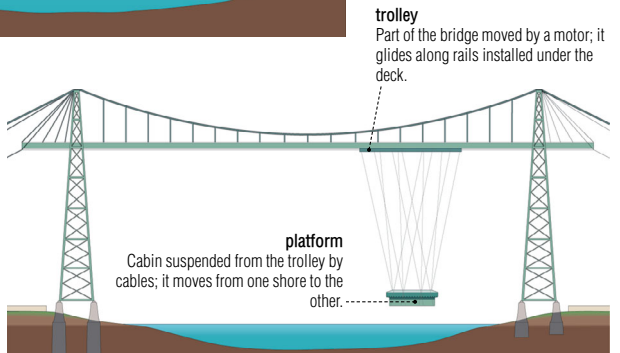
### floating bridge

Bridge whose deck rests on pontoons that can be taken apart to open the bridge.



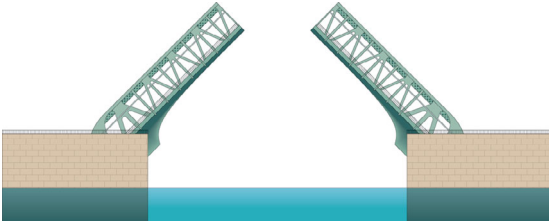
### transporter bridge

Bridge with a very high deck from which a moving platform is suspended to transport pedestrians and vehicles.

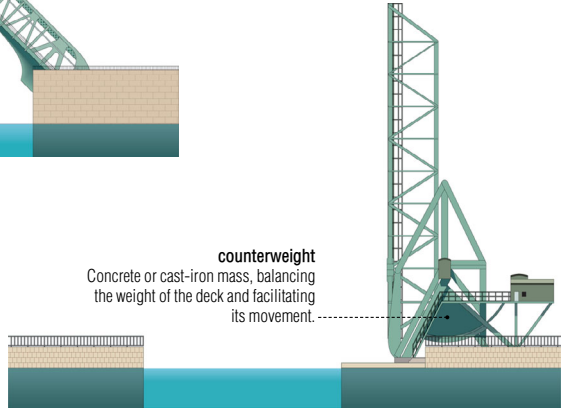


**double-leaf bascule bridge**

Bridge whose deck is composed of two spans joining each other at the middle of the bridge and pivoting around a vertical axle at each abutment.

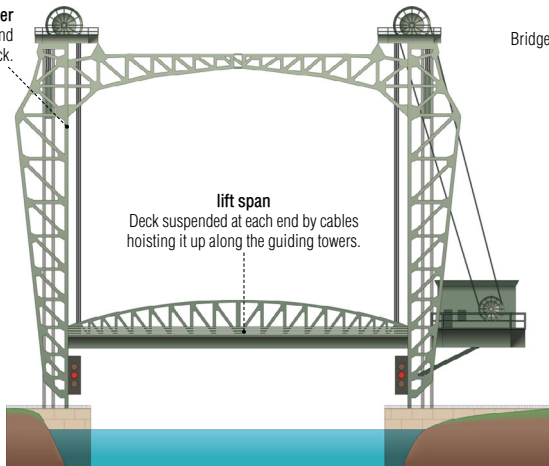
**single-leaf bascule bridge**

Bridge whose deck is raised by means of a counterweight mechanism.

**counterweight**

Concrete or cast-iron mass, balancing the weight of the deck and facilitating its movement.

**guiding tower**  
Pylon equipped with pulleys and cables for hoisting the deck.

**lift span**

Deck suspended at each end by cables hoisting it up along the guiding towers.

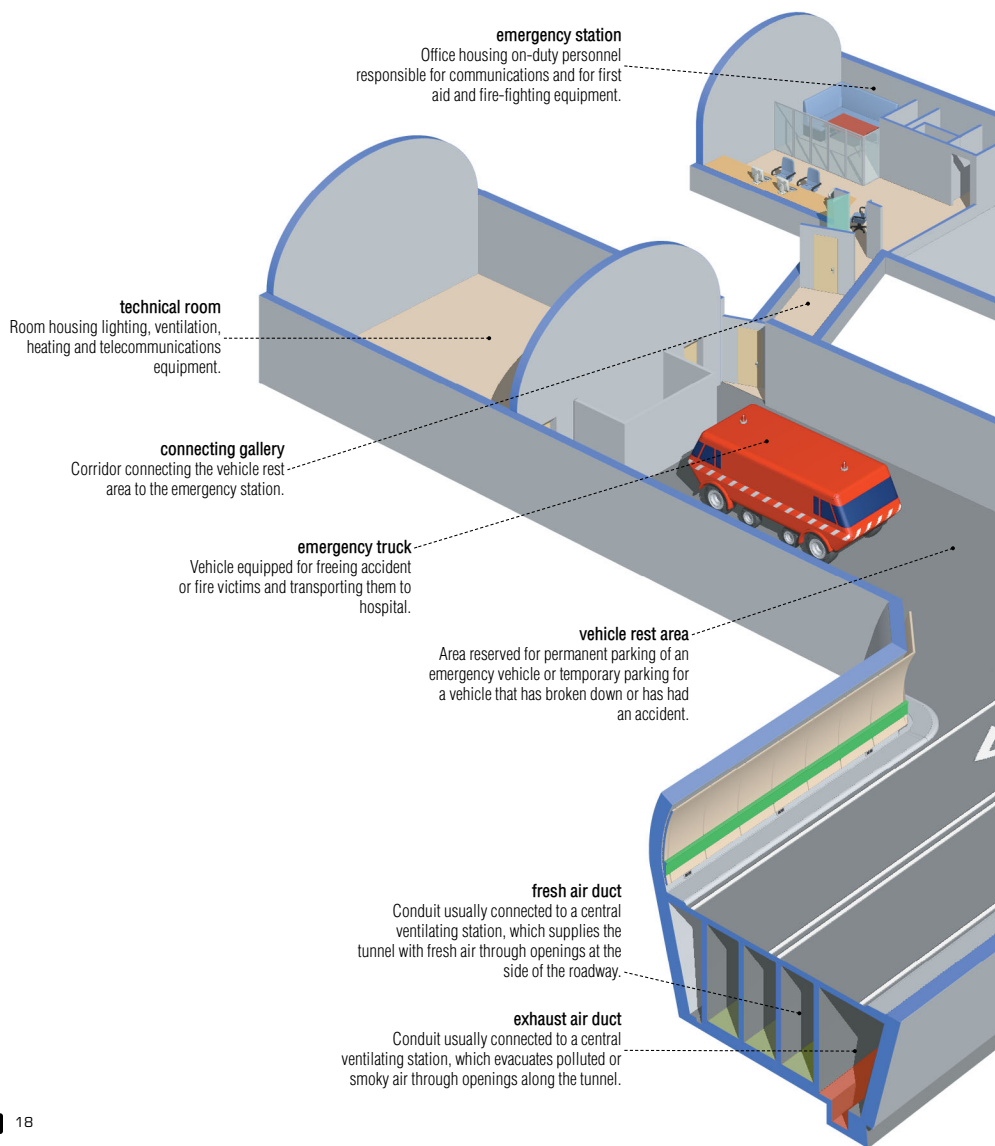
**lift bridge**

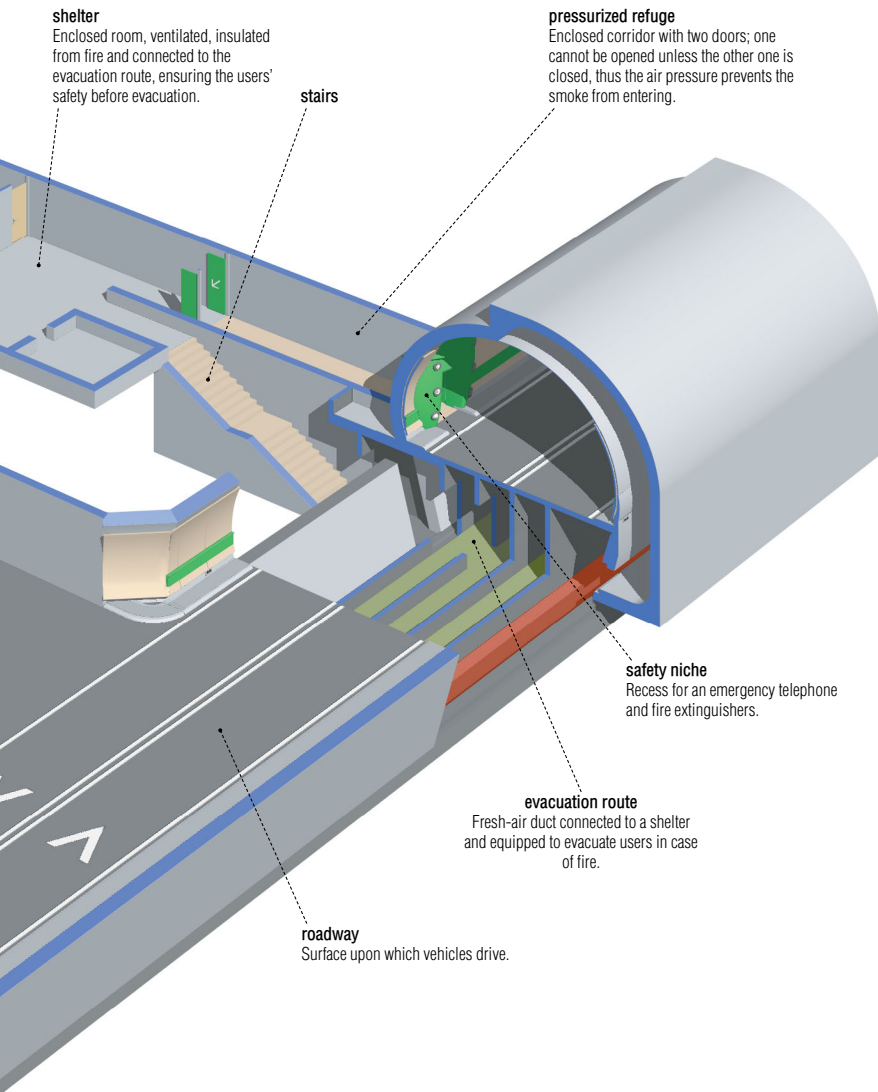
Bridge whose deck is raised by a system of cables.



## road tunnel

Underground passage for a road under an obstacle, such as a river or a hill.

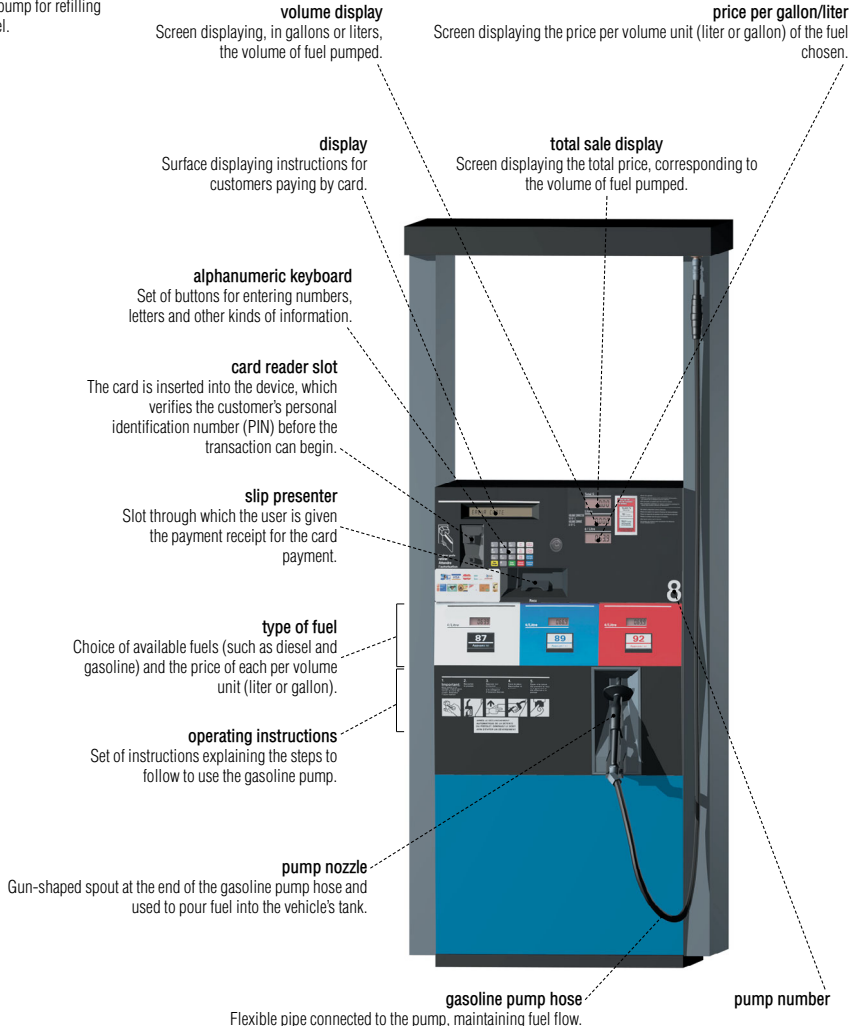




## service station

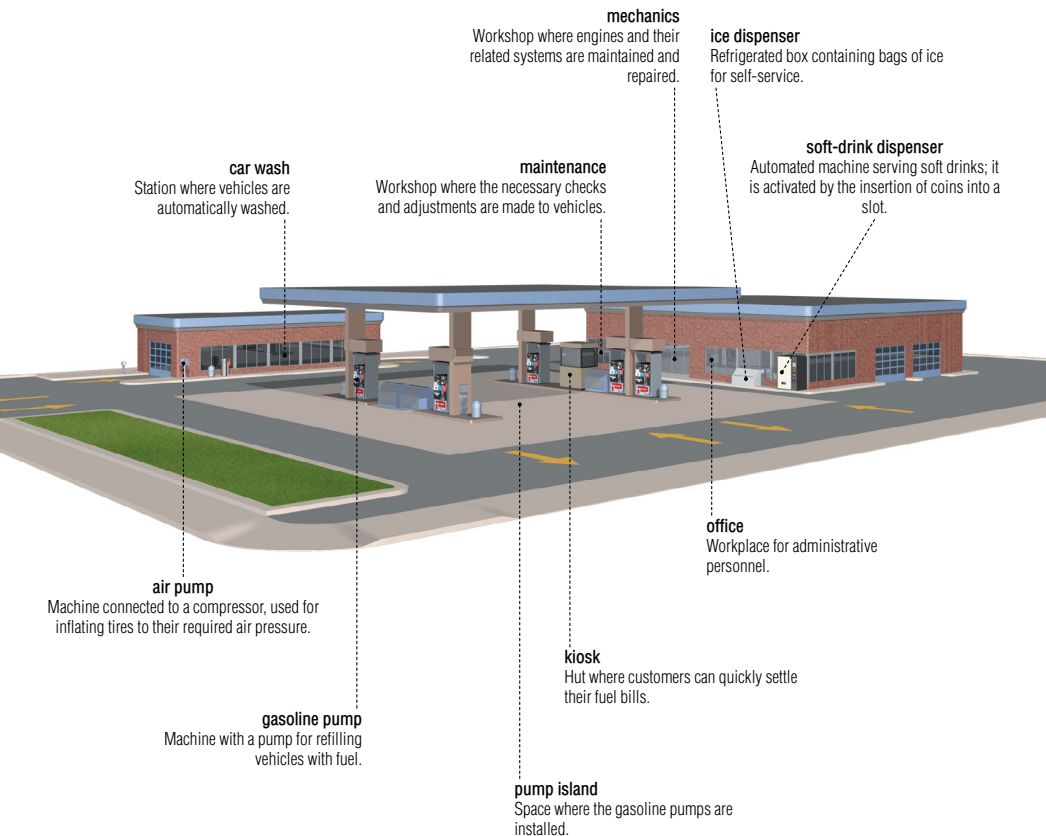
**gasoline pump**

Machine with a pump for refilling vehicles with fuel.



**service station**

Commercial establishment comprising one or several gasoline pumps and carrying out general maintenance of vehicles.



# automobile

Motor vehicle comprising four wheels, developed for transporting a small number of people and small loads.

## examples of bodies

Styles vary from manufacturer to manufacturer and from year to year but there is little variation in the basic model.

### micro compact car

Very small automobile comprising two seats and integrated cargo area, designed to be driven and parked in large cities.



### sports car

Automobile with an aerodynamic look comprising two doors, a small trunk separate from the passenger compartment and, sometimes, narrow rear seats.



### two-door sedan

Automobile comprising two doors, a trunk separate from the passenger compartment and four places.



### hatchback

Automobile comprising two doors and a lift gate, folding front seats granting access to the rear seats, and a cargo area integrated with the passenger compartment.



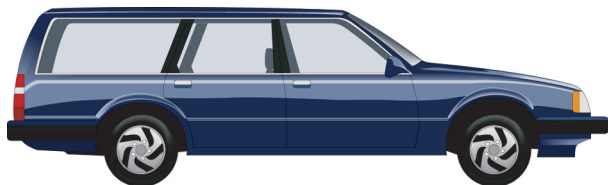
### four-door sedan

Automobile comprising four doors and a trunk separate from the passenger compartment.

### convertible

Automobile comprising two or four doors and a soft or hard retractable roof.



**station wagon**

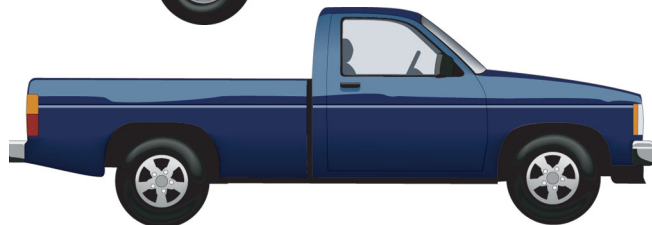
Automobile comprising four doors, a large cargo area integrated with the passenger compartment and folding rear seats for enlarging the cargo area.

**minivan**

Automobile comprising three rows of seats; the last row can be folded down to enlarge the cargo area.

**sport-utility vehicle**

Automobile designed to be driven on any kind of roadway or on rugged terrain.

**pickup truck**

Automobile comprising only one row of seats and an uncovered bed closed off by a gate.

**limousine**

Spacious deluxe sedan comprising four or more doors; the passenger area is separated from the chauffeur's.

## automobile

**body**

Automobile structure designed to house and protect the mechanical components, the passengers and cargo.

**windshield wiper**  
Rubber squeegee, usually mounted in a pair; it is activated by a motor and cleans the windshield.

**windshield**  
Glass and plastic pane protecting the occupants from inclement weather while providing good visibility.

**outside mirror**  
Mirror fixed to the outside of the passenger compartment enabling the driver to see behind and along the sides of the vehicle without turning around.

**cowl**  
Transverse component of the body between the hood and the windshield allowing air into the passenger compartment.

**washer nozzle**  
Device squirting liquid on the windshield in order to clean it.

**hood**  
Lidlike part of the body covering and protecting the engine.

**grille**  
Plastic or metal grating in front of the vehicle protecting the radiator and serving as decoration.

**bumper molding**  
Metal or plastic trim embellishing the front and rear bumpers.

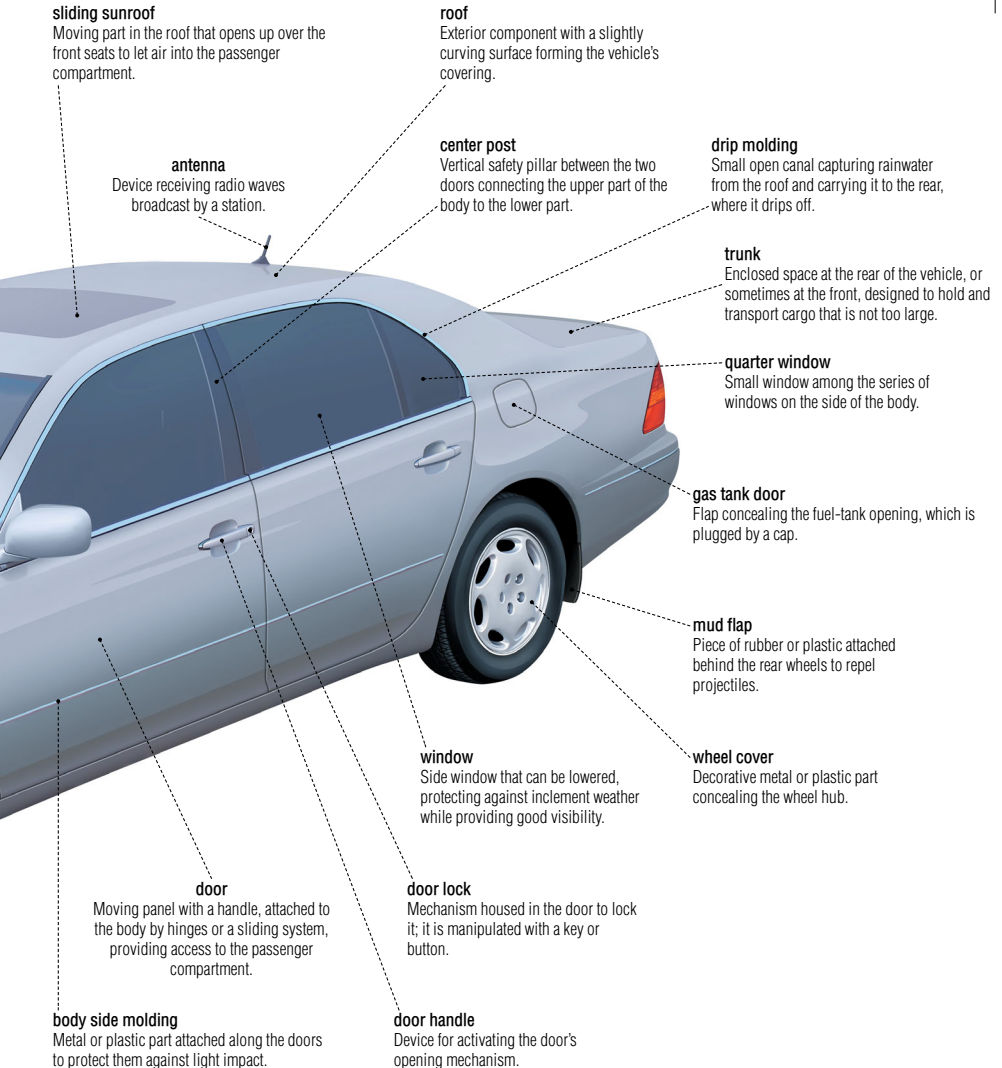
**headlight**  
Lamp on the front of the vehicle to light up the space in front.

**fender**  
Component of the body forming a streamlined and aerodynamic casing around the wheels.

**front fascia**  
Component on the exterior of the body below the bumpers reducing air resistance.

**tire**  
Circular deformable unit made of rubber, mounted on the wheel and inflated with air, providing the connection between the car and the road, and absorbing the unevenness of the road.







## automobile

**headlights**

Set of regulation luminous devices placed on the front of a vehicle for illuminating and signaling.

**low beam**

Lamp illuminating the road at short distances (30 yards), used instead of high beam to avoid blinding drivers coming in the opposite direction.

**high beam**

Lamp illuminating the road over a long distance (100 yards), used outside urban areas.

**fog light**

Lamp whose light rays are directed toward the roadway and illuminate the road shoulder, by which the driver navigates in the event of fog.

**side marker light**

Colored light demarcating the width of the vehicle.

**turn signal**

Device emitting an intermittent light, signaling a change of the vehicle's direction or a temporary hazard to other vehicles.

**taillights**

Set of regulation lighting devices placed at the rear of a vehicle and used for signaling.

**brake light**

Light that goes on automatically when the driver steps on the brake pedal in order to warn the vehicles following it.

**license plate light**

Lighting device for a vehicle's license plate, making it visible in darkness.

**taillight**

Lamp turning on automatically when the front lights are lit, making the vehicle visible for up to 150 yards.

**side marker light**

Colored light demarcating the width of the vehicle.

**brake light**

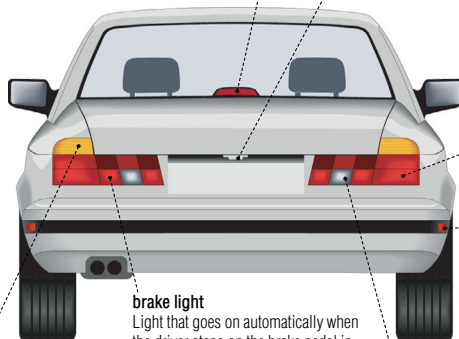
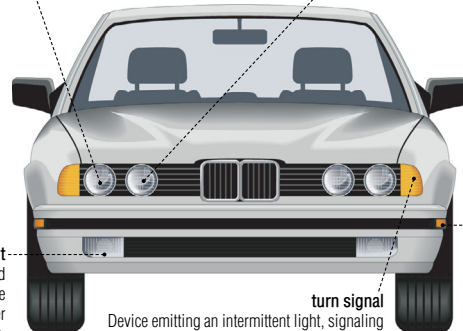
Light that goes on automatically when the driver steps on the brake pedal in order to warn the vehicles following it.

**reverse light**

White lamp that turns on automatically to warn motorists and pedestrians when the driver puts the car in reverse.

**turn signal**

Device emitting an intermittent light, signaling a change of the vehicle's direction or a temporary hazard to other vehicles.



**door**

Moving panel with a handle, attached to the body by hinges or a sliding system, providing access to the passenger compartment.

**outside mirror control**

Lever for adjusting the position of the outside mirror from the inside.

**window regulator handle**

Handily placed lever that turns to activate the mechanism raising and lowering the window.

**assist grip**

Handle allowing the passenger to pull the door inward in order to close it.

**window**

Side window that can be lowered; it protects against inclement weather while ensuring good visibility.

**interior door lock button**

Visible end of the rod activating the lock; it is lifted or lowered to unlock and lock the door.

**lock**

Mechanism housed in the door to lock it; it is manipulated with a key or button.

**trim panel**

Component covered with fabric, plastic or leather, upholstering the inside of the door.

**inner door shell**

The door's metal structure, serving to absorb impacts; it also encloses the locking mechanisms and, when it is lowered, the window.

**accessory pocket**

Open compartment fitted into the bottom of the door, for storing small objects.

**armrest**

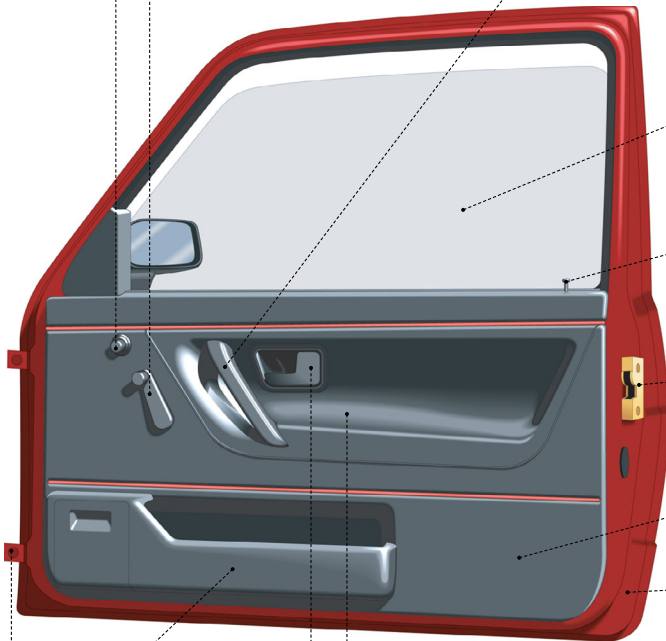
Support fixed to the door, for resting the arm.

**interior door handle**

Mechanism for opening the door from the inside of the vehicle.

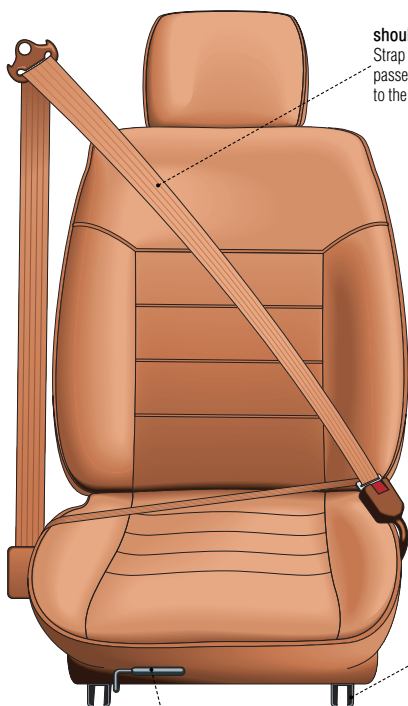
**hinge**

Articulating mechanism supporting the door and enabling it to pivot while it is being opened and closed.



**bucket seat: front view**

Bucket seat: upholstered and adjustable seat that envelopes the occupant's body, keeping it in place during turns and providing greater comfort.

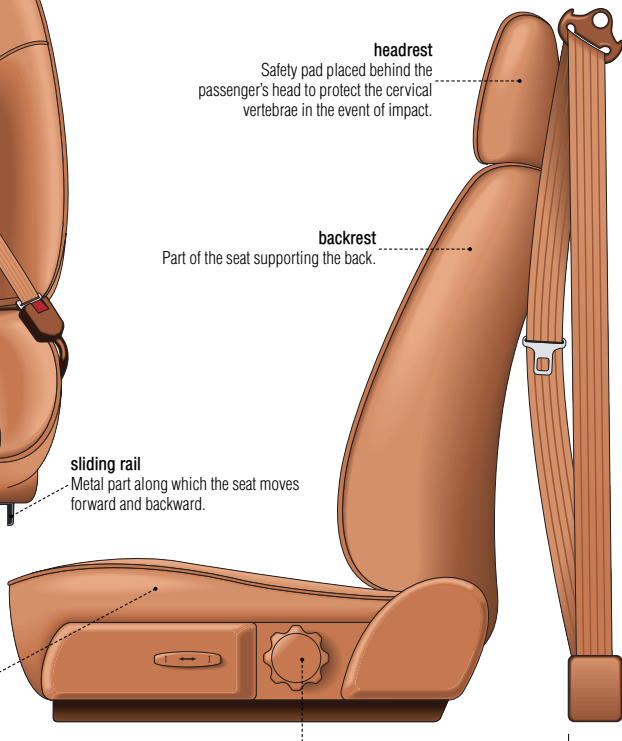
**shoulder belt**

Strap crossing in front of the passenger's thorax, from the shoulder to the hip.

**sliding lever**

Handle for moving the seat toward or away from the dashboard, in relation to the passenger's height.

**seat**  
Horizontal unit for a passenger to sit on.

**bucket seat: side view****headrest**

Safety pad placed behind the passenger's head to protect the cervical vertebrae in the event of impact.

**backrest**

Part of the seat supporting the back.

**sliding rail**

Metal part along which the seat moves forward and backward.

**adjustment knob**

The seat's regulating mechanism, for changing the angle of the backrest to an almost horizontal position.

**seat belt**

Safety device fitted with sliding straps, keeping the passenger in the seat in the event of an accident.

**rear seat**

Bench containing several spaces installed in the rear of the passenger compartment and occupying its full width.

**armrest**

Folding support in the middle of the rear seat, for resting the forearm.

**webbing**

Center belt in the rear seat, strapping in the passenger's pelvis and restraining only the lower part of the body in the event of impact.

**bench seat**

Horizontal unit for sitting on, providing up to three spaces.

**buckle**

Clasp keeping the seat belt around the passenger and released by pressing with the finger.

**dashboard**

Component in the passenger compartment comprising the instrument panel, the manual controls, storage and other accessories.

**wiper switch**

Electric mechanism for switching on the windshield wipers, controlling their speed and activating the windshield washer fluid.

**cruise control**

Mechanism enabling the driver to maintain a cruising speed for the vehicle.

**ignition switch**

Switch activated by a contact key allowing a current from the battery to flow to the starter.

**headlight/turn signal**

Lever having several positions that control the turn signals and the low and high beams.

**horn**

Device emitting a loud sound that the driver can use to attract the attention of a pedestrian or other user of the road.

**steering wheel**

Circular instrument used by the driver for steering the guide wheels.

**clutch pedal**

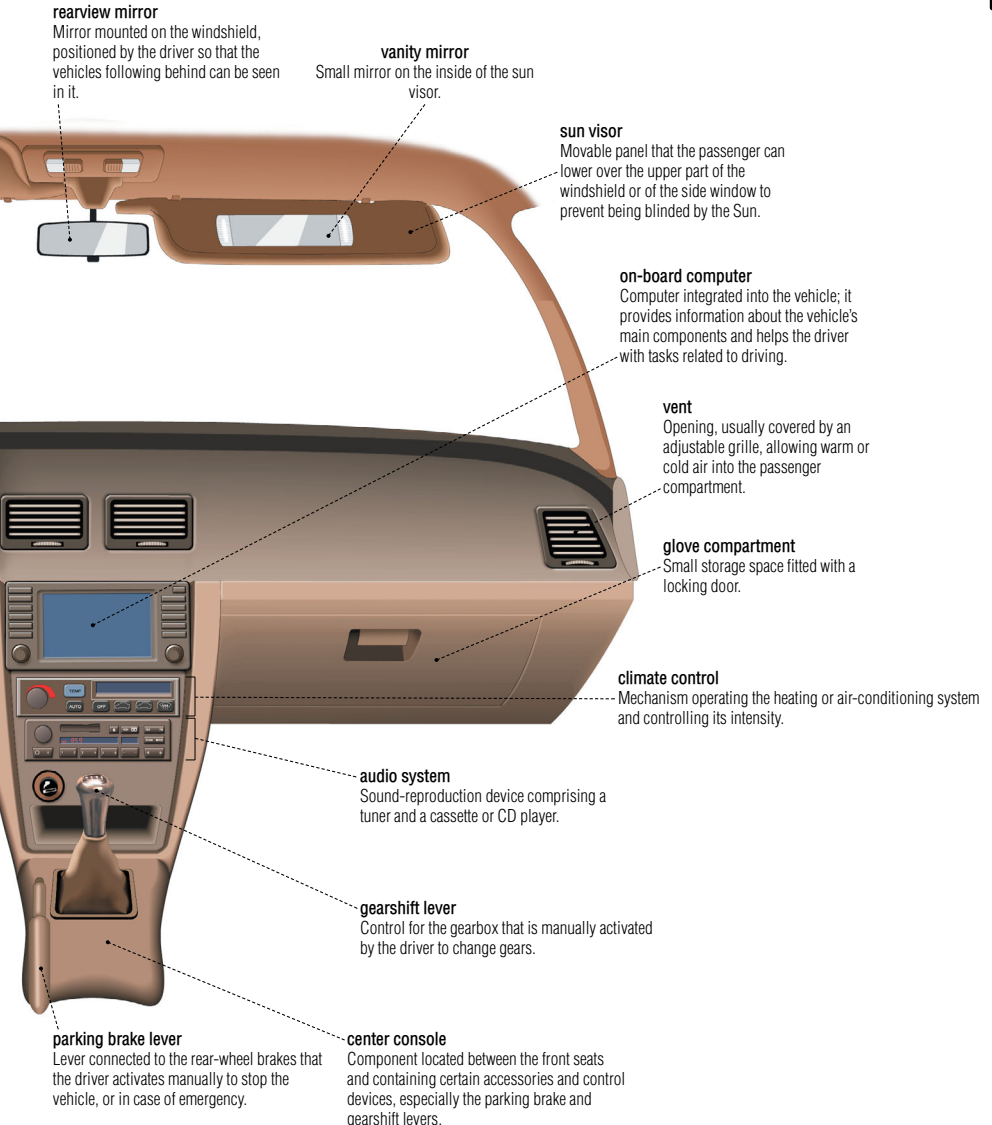
Pedal pushed to change gears.

**brake pedal**

Lever that the driver presses with the foot to activate the brake system.

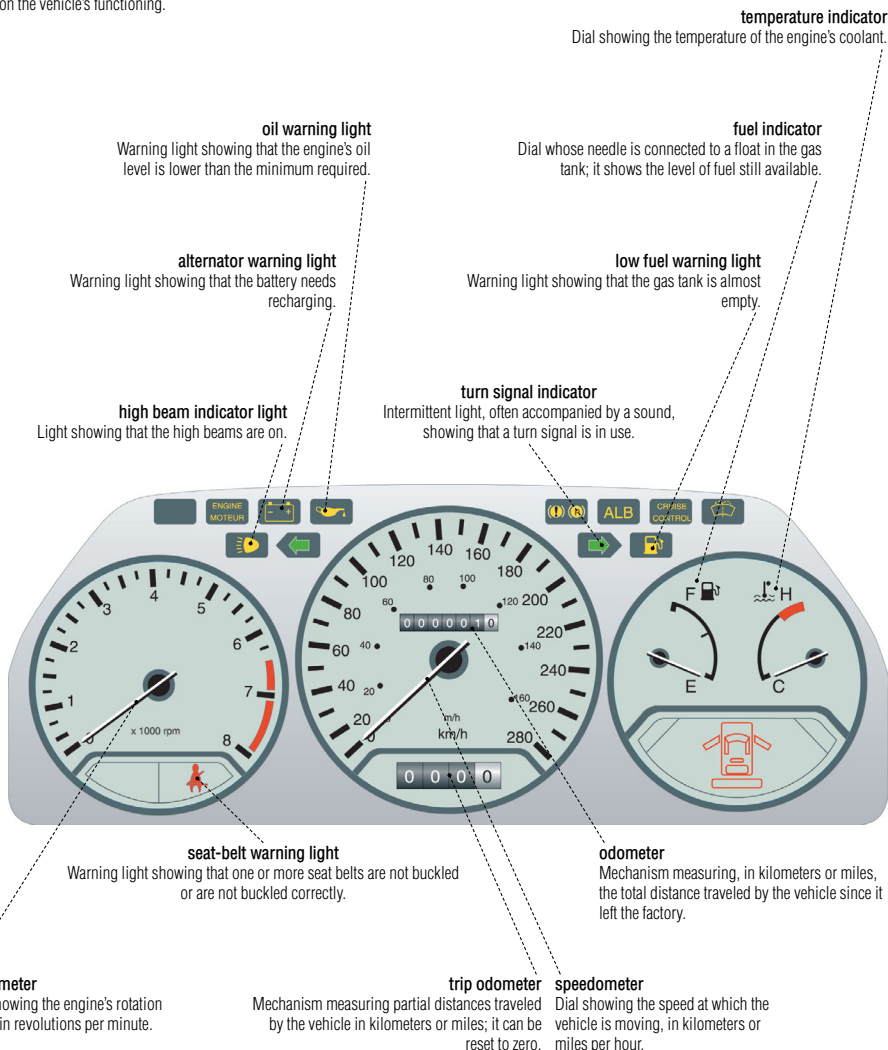
**gas pedal**

Unit controlled by the foot to increase, maintain or decrease the vehicle's speed.



**instrument panel**

Set of dials and warning lights within the driver's view that report on the vehicle's functioning.



**air bag restraint system**

Automatic safety device containing air bags that, in the event of impact, instantly come between the occupants and the dashboard.

**air bag**

Flexible envelope encased in the dashboard, the steering wheel or the doors, which inflates with pressurized gas when it receives the signal from the safing sensor.

**safing sensor**

Device that receives the signal from the primary sensor and deploys the air bags. It has safeguards against deploying accidentally.

**primary crash sensor**

Device located at the front of the vehicle, which, in the event of collision, transmits the pulse it receives to the safing sensor.

**electrical cable**

Cable connecting the safing sensor, which causes the air bags to deploy.

**windshield wiper**

Rubber squeegee, usually mounted in a pair; it is activated by a motor and cleans the windshield.

**windshield wiper blade**

Metal part supporting the wiper through the actions of two small connecting rods.

**wiper arm**

Metal rod with a to-and-fro motion that exerts a uniform pressure on the blade attached to it.

**fluted shaft**

Part driven by an electric motor, whose rotating motion it converts into alternating motion through two connecting rods.

**tension spring**

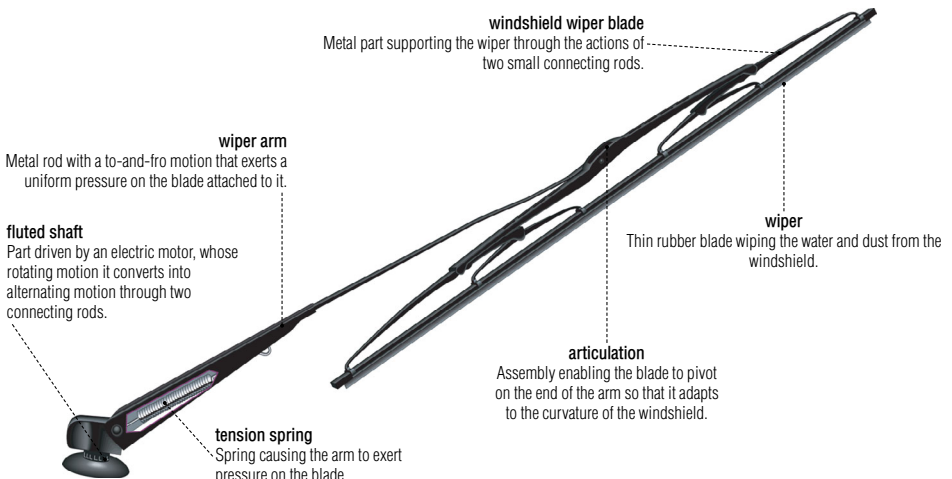
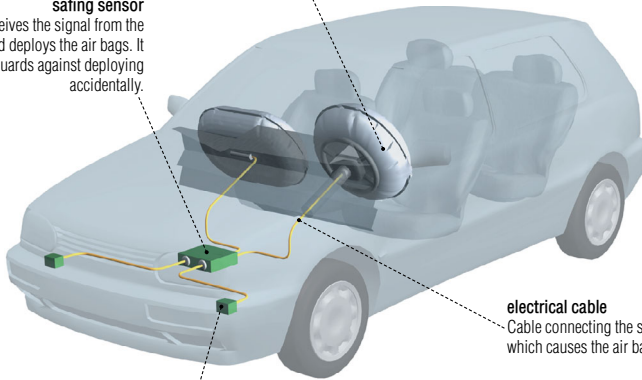
Spring causing the arm to exert pressure on the blade.

**wiper**

Thin rubber blade wiping the water and dust from the windshield.

**articulation**

Assembly enabling the blade to pivot on the end of the arm so that it adapts to the curvature of the windshield.





**accessories**

Secondary components of a vehicle, used for its maintenance, safety and such.

**roller shade**

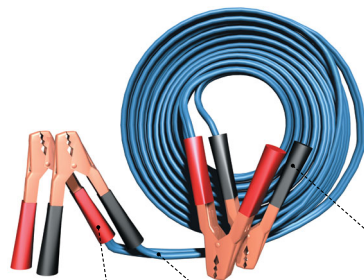
Shade with a roller containing a spring that causes the shade cloth to roll up; it is usually placed on a side window.

**floor mat**

Fabric or rubber covering placed under the passengers' feet in order to protect the floor of the vehicle.

**jumper cables**

Cables fitted with alligator clips for connecting an emergency battery to a discharged one.

**black clamp**

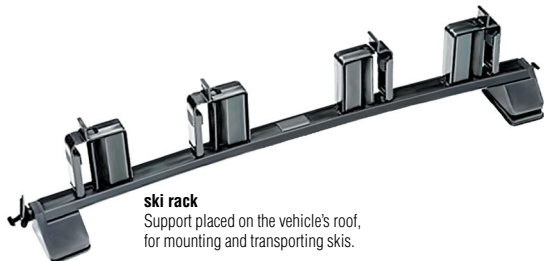
A black clamp is fitted on the negative terminal of the emergency battery; the other is attached to a metal part of the other car.

**red clamp**

A red clamp is fitted on the positive terminal of both batteries.

**cable****snow brush with scraper**

Small broom with one end for removing snow from the vehicle and the other for scraping ice off the windows.

**ski rack**

Support placed on the vehicle's roof, for mounting and transporting skis.

**bike carrier**

Support placed on the roof or the rear of the vehicle, on which one or more bicycles can be mounted and transported.



**jack**

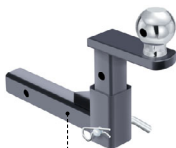
Mechanism activated by a handle, for raising the vehicle.

**handle**

Lever comprising two right-angle bends, for activating the jack mechanism to raise and lower it.

**hitch ball**

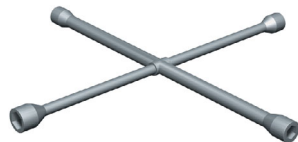
Device for hooking up a trailer or caravan to a vehicle.

**ball mount**

Part attached under the rear of the vehicle, with a hitch ball on one end; the trailer's or caravan's hitch articulates with it.

**four-way lug wrench**

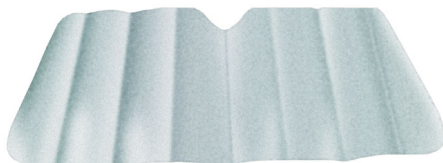
Wrench for tightening and loosening the wheel nuts; it is made up of two crossed rods with each end having a different size.

**child safety seat**

Chair adapted to the size of a child; it is equipped with a safety harness for keeping the child seated and attached to the rear seat by the seat belt.

**sun visor**

Screen placed inside the windshield of a parked vehicle to protect the passenger compartment from the Sun's rays.

**car cover**

Flexible casing for covering and protecting the vehicle from the sun, dust and inclement weather.

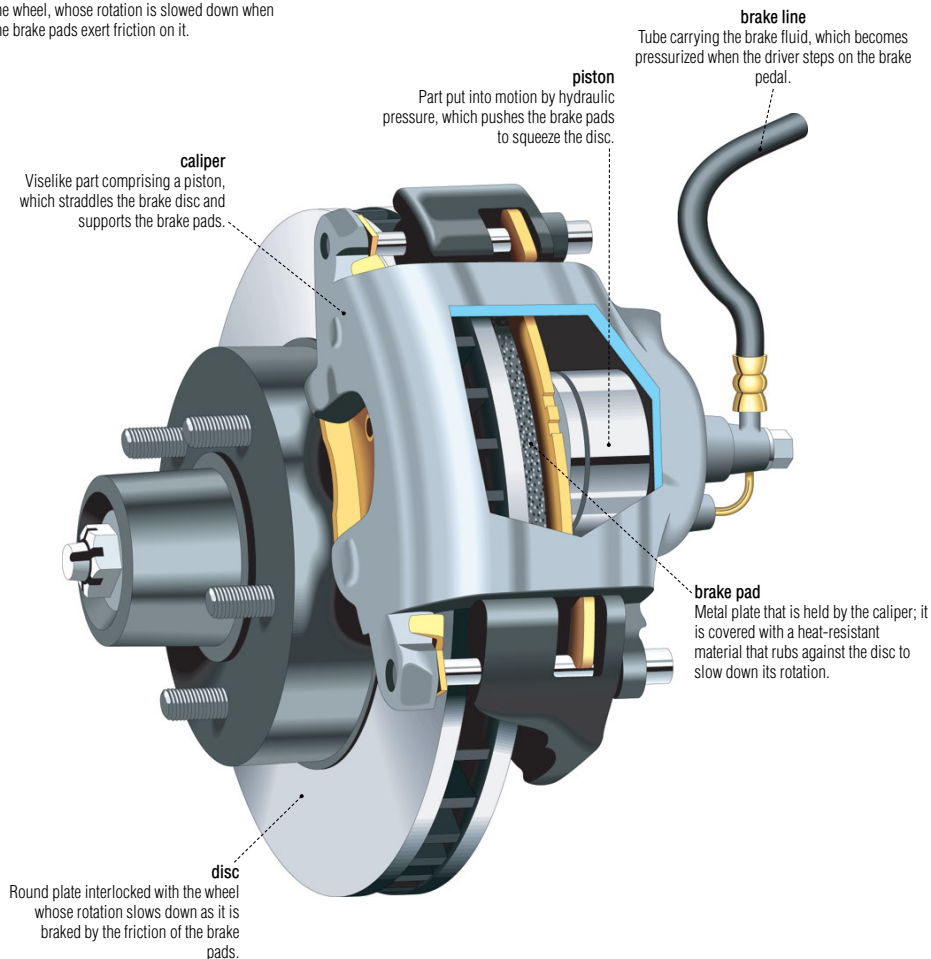


# brakes

Units slowing down or stopping the rotation of the vehicle's wheels.

## disc brake

Braking mechanism comprising a disc attached to the wheel, whose rotation is slowed down when the brake pads exert friction on it.



**drum brake**

Braking mechanism comprising a drum interlocked with the wheel; the brake shoes rub against the drum to slow down the wheel's rotation.

**wheel cylinder**

Mechanism with a cylinder and two pistons that converts the hydraulic pressure in the master cylinder to mechanical force that is applied to the brake shoes.

**piston**

Part that slides in the cylinder under hydraulic pressure and pushes the brake shoe against the drum.

**anchor pin**

Axle serving as an anchoring point for the brake shoe, enabling it to move when acted upon by the piston.

**brake shoe**

Crescent-shaped part interlocked with an anchor pin; it is fitted with a lining, which moves against the interior surface of the drum to slow its rotation.

**return spring**

Spring returning the brake shoe to its initial position once the pressure on the brake pedal has ceased.

**backing plate**

Fixed part serving as a mount for the brake shoes, cylinder and anchor pin.

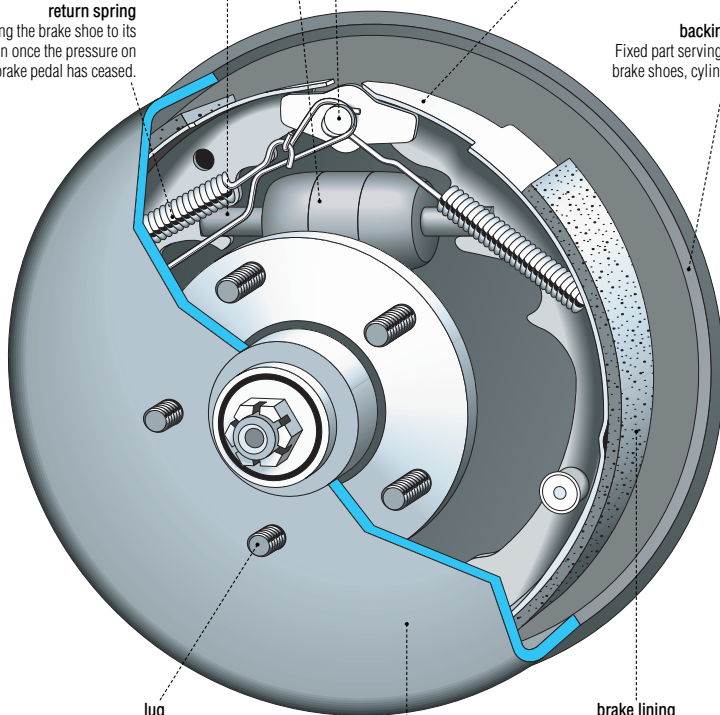
**lug**  
Part for assembling and interlocking the drum and the wheel.

**drum**

Part interlocked with the wheel so that the wheel slows its rotation when the brake shoes rub against the inside of the drum.

**brake lining**

Band of material attached to the brake shoe; heat resistant, it increases the frictional force on the drum.



**antilock braking system (ABS)**

Electronic device controlling the hydraulic pressure in the braking circuit, to prevent the wheels from locking.

**brake fluid reservoir**

Reservoir supplying the master cylinder with the fluid that transmits pressure to the brakes after the driver presses the brake pedal.

**brake booster**

Mechanism amplifying the force exerted by the driver on the brake pedal.

**master cylinder**

Mechanism composed of a cylinder and pistons that converts the mechanical force of the brake pedal into hydraulic pressure that is transmitted to the brakes.

**wheel speed sensor**

Device sensing the rotation speed of a wheel and transmitting that information to the control unit.

**electronic control unit**

Device that, as a result of signals received from the wheel speed sensor, controls the brake pressure modulator to give the optimal hydraulic pressure.

**sensor wiring circuit**

Set of electric wires transmitting the signals from the sensor to the electronic control unit.

**disc brake**

Braking mechanism comprising a disc attached to the wheel, whose rotation is slowed down when the brake pads exert friction on it.

**brake pedal**

Lever that the driver presses with the foot to activate the brake system.

**pump and motor assembly**

Pump driven by an electric motor, circulating the brake fluid from the accumulator to the master cylinder.

**brake pressure modulator**

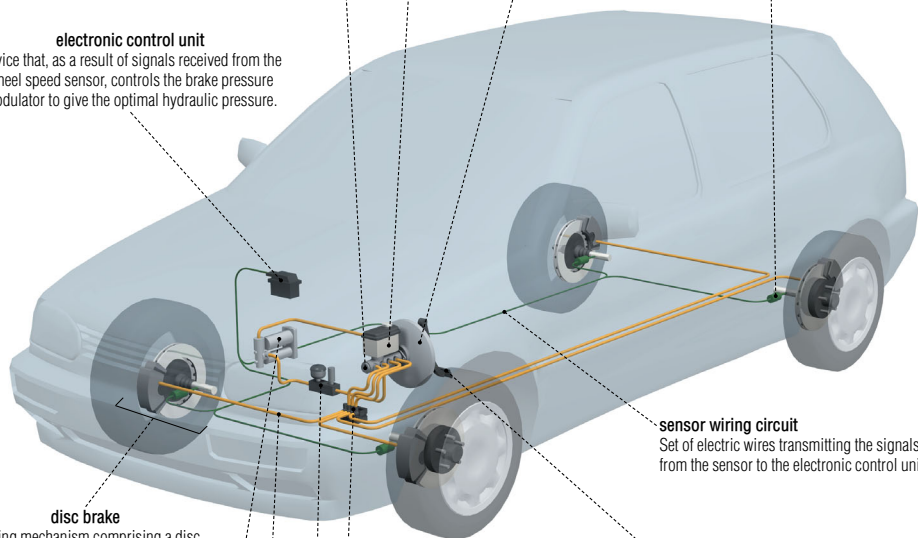
Hydraulic unit fitted with electric valves that, depending on the signals received from the electronic control unit, adjusts the pressure in each wheel cylinder.

**braking circuit**

System of tubes containing a fluid that activates the brakes when they come under pressure from the pedal.

**accumulator**

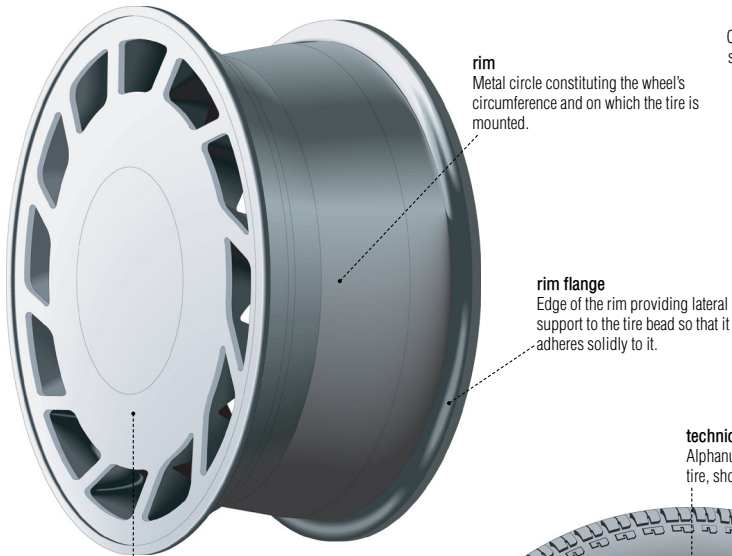
Device temporarily holding the hydraulic brake fluid while the modulator lowers the pressure.



Circular deformable unit made of rubber, mounted on the wheel and inflated with air, providing the connection between the car and the road, and absorbing the unevenness of the road.

**wheel**

Circular unit turning around an axle; it supports the weight of the vehicle and transmits the thrust, steering and braking actions.



**rim**  
Metal circle constituting the wheel's circumference and on which the tire is mounted.

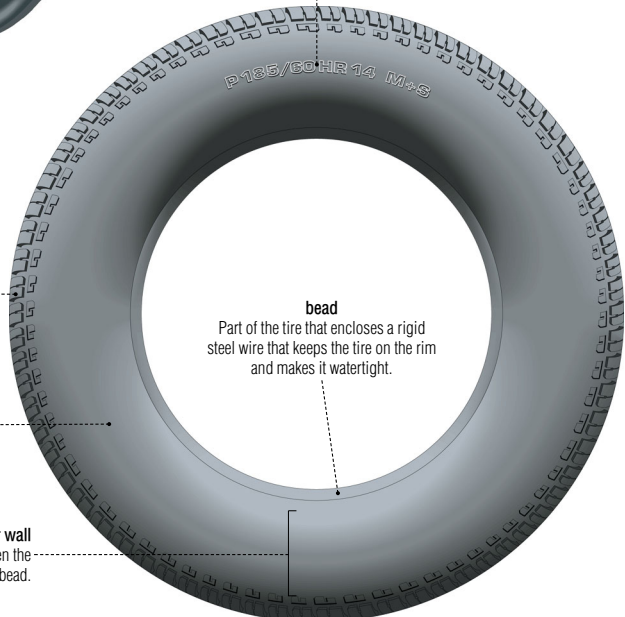
**rim flange**  
Edge of the rim providing lateral support to the tire bead so that it adheres solidly to it.

**disk**

A part of the rim that is fixed at its center on the wheel's axle.

**technical specifications**

Alphanumeric code molded onto the side of the tire, showing its characteristics.

**tread design**

Raised part of the tire tread that improves traction for various usage conditions.

**rubbing strip**

Round protrusion of the rubber wall, protecting it from side impact and wear.

**rubber wall**

Part of the tire located between the tread and the bead.

**bead**

Part of the tire that encloses a rigid steel wire that keeps the tire on the rim and makes it watertight.

**examples of tires**

Depending on the intended conditions and uses, tire construction (e.g., type of rubber, tread design, width) varies widely.

**performance tire**

Wide tire that withstands particularly high temperatures and offers superior performance in holding the road and handling turns.

**all-season tire**

Tire designed for driving on roads that are dry, wet or slightly snow-covered.

**winter tire**

Tire characterized by ridges providing a good grip on snow- and ice-covered roads.

**touring tire**

Tire designed for driving on dry or wet roads, but not recommended for snow or ice.

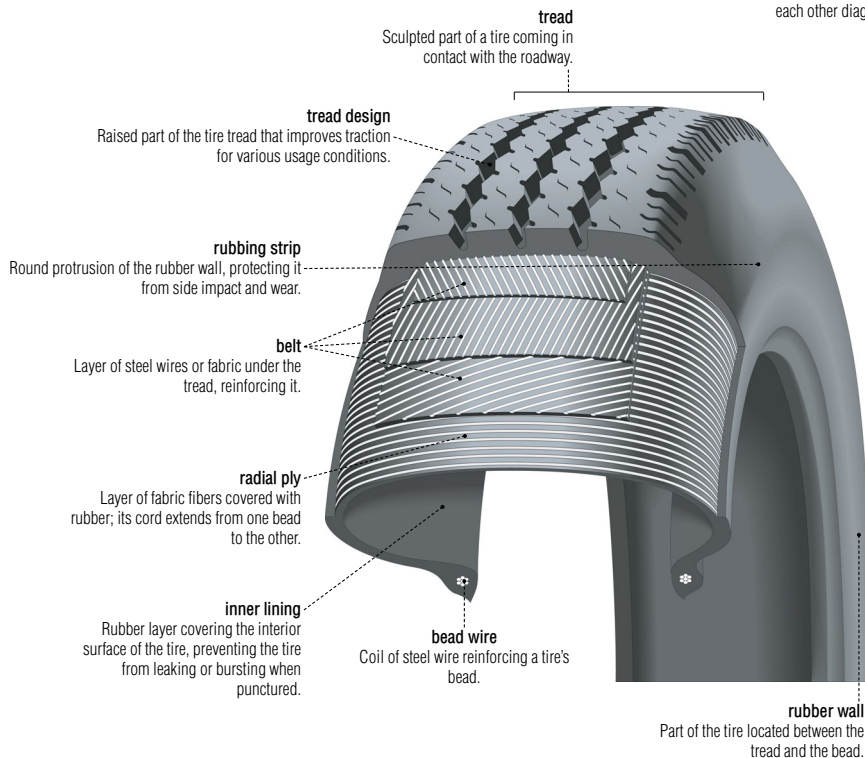
**studded tire**

Tire whose tread is fitted with metal studs, which provide a good grip on icy roads.



**steel belted radial tire**

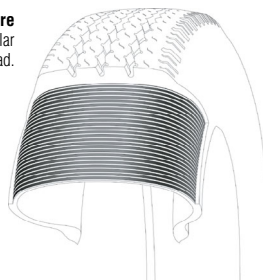
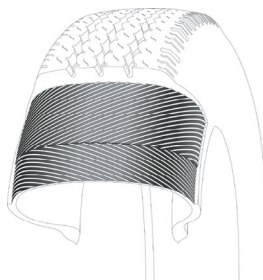
Hybrid tire with addition belts laid on top of the plies of the radial tire; the cords of these belts crisscross each other diagonally.



**radial tire**  
Tire with plies whose cords are perpendicular to the direction of the tread.

**bias-ply tire**

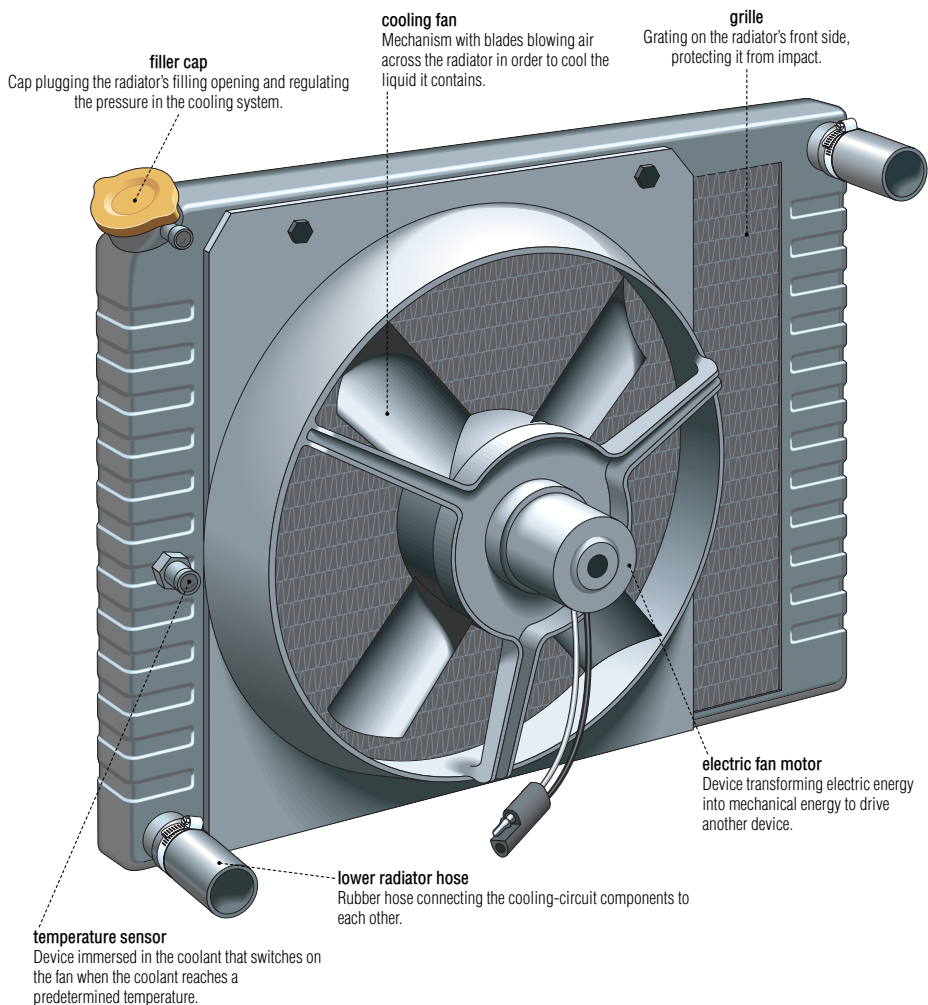
Tire with plies whose cords cross each other and are diagonal to the direction of the tread.



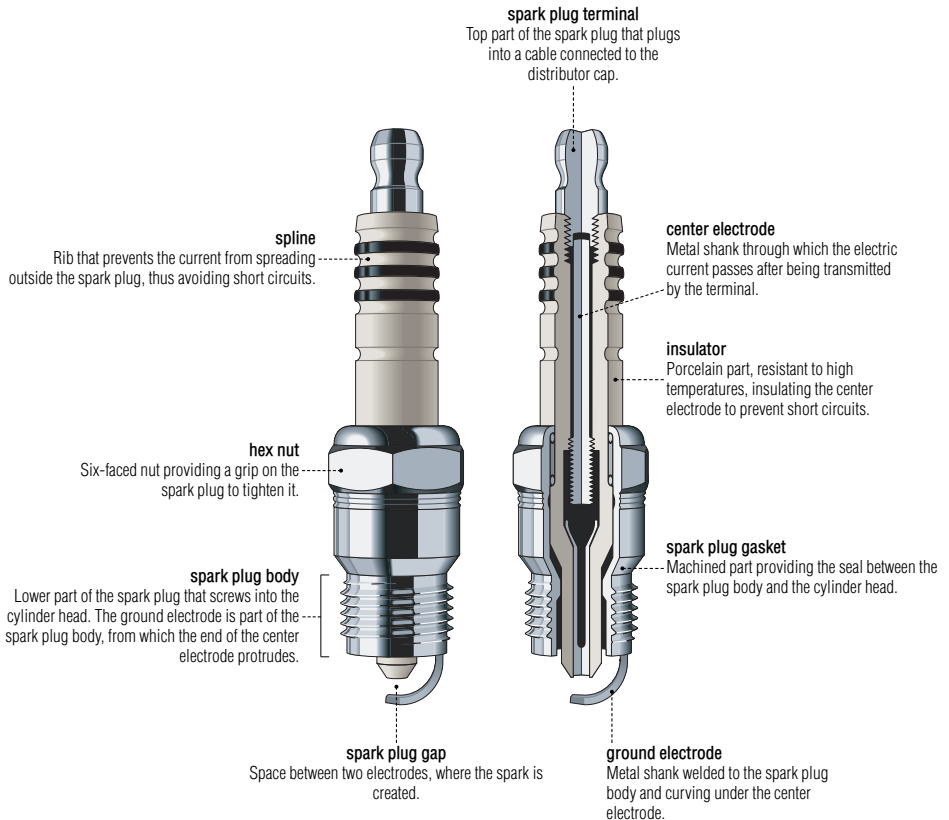


## radiator

Vessel in which the coolant, which circulates around the engine, is cooled by means of flowing air.

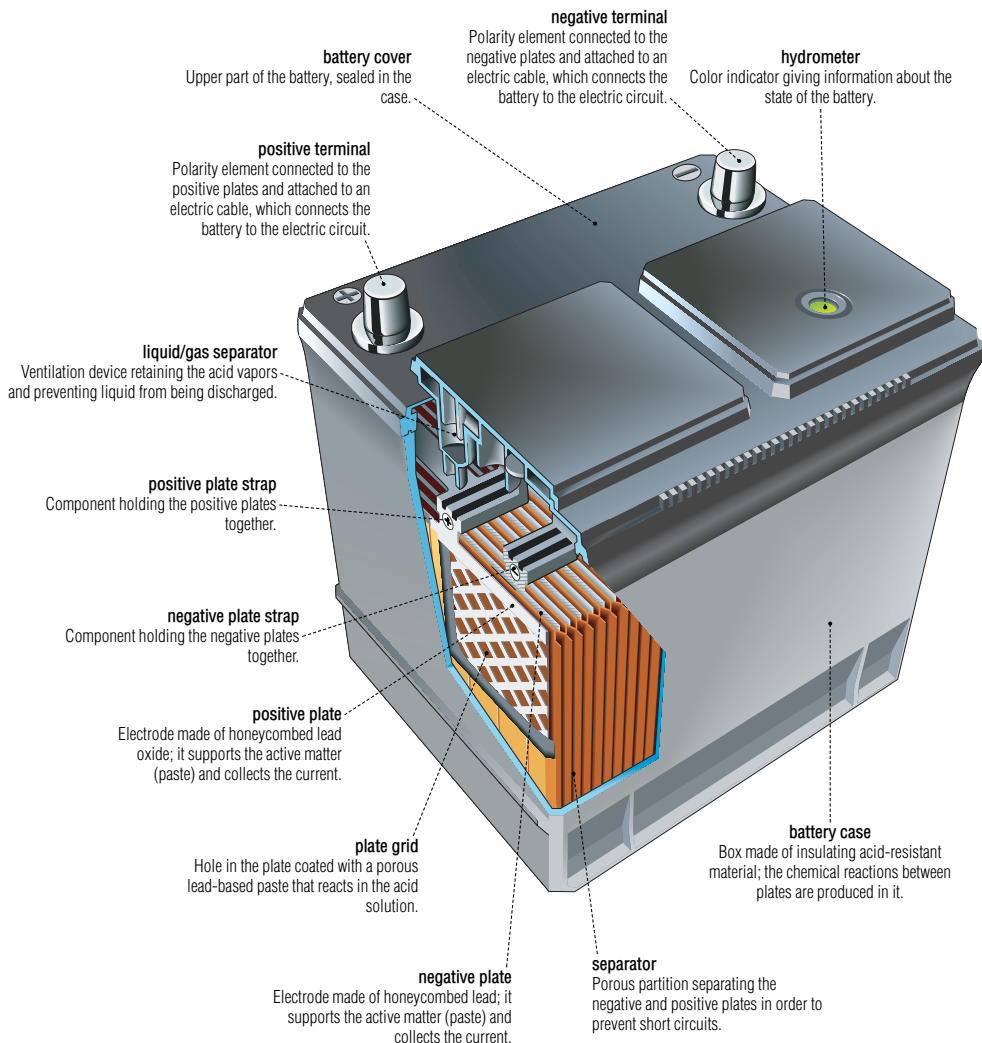


Electric device whose two electrodes produce the spark necessary to ignite the air/gasoline mixture in the cylinder.

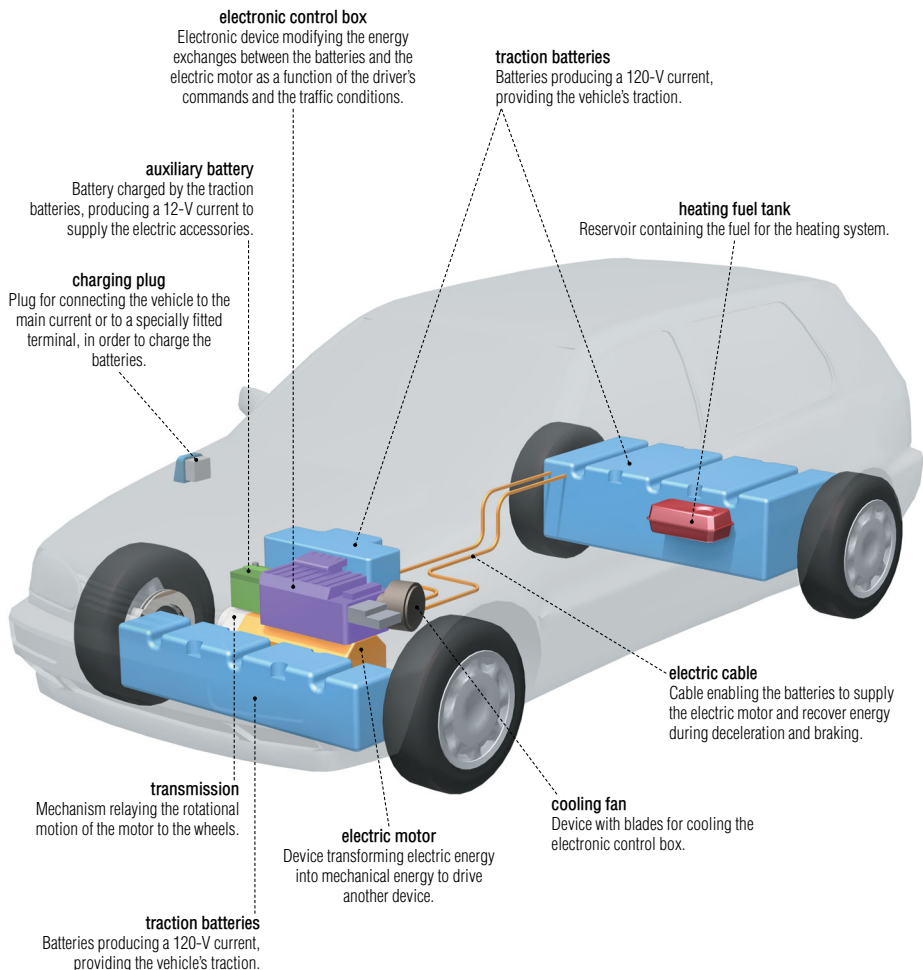


## battery

Unit storing the electricity produced by the alternator and releasing it to supply the vehicle's electric system.

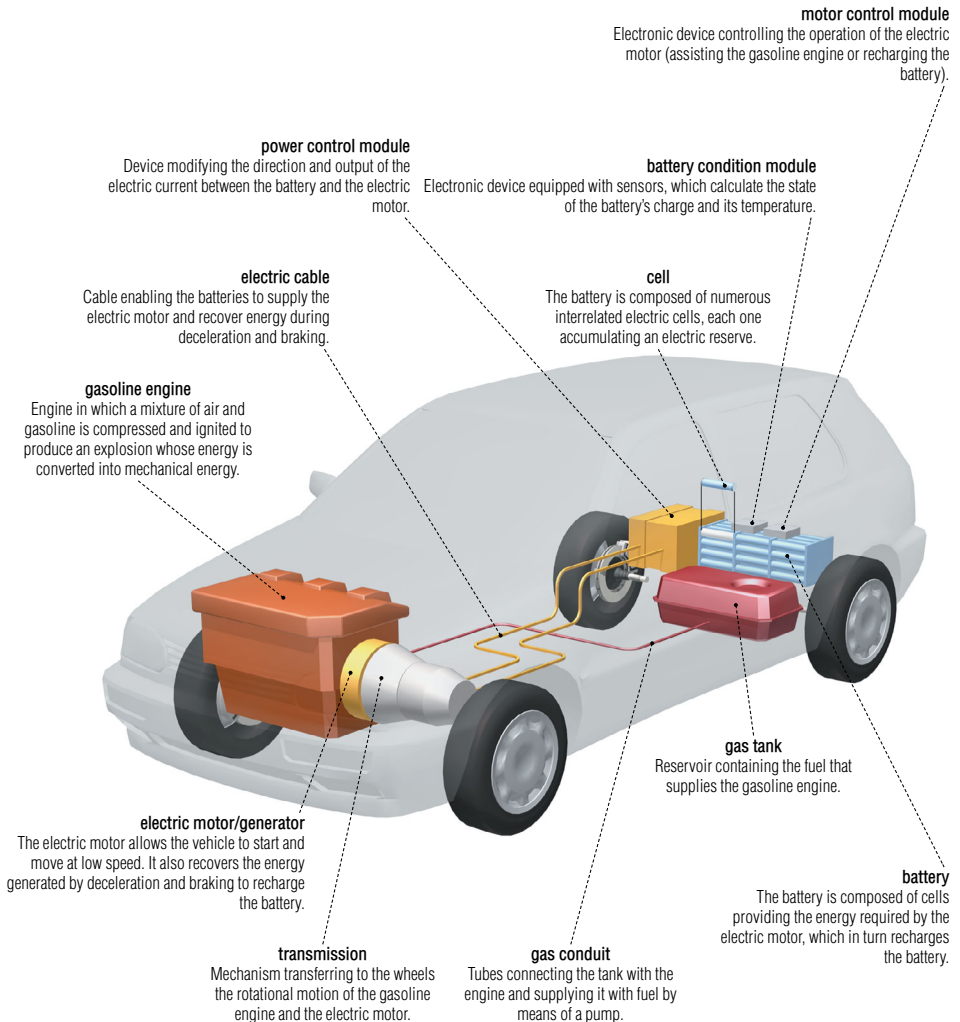


Car propelled by an electric motor whose energy is provided by a battery.



# hybrid automobile

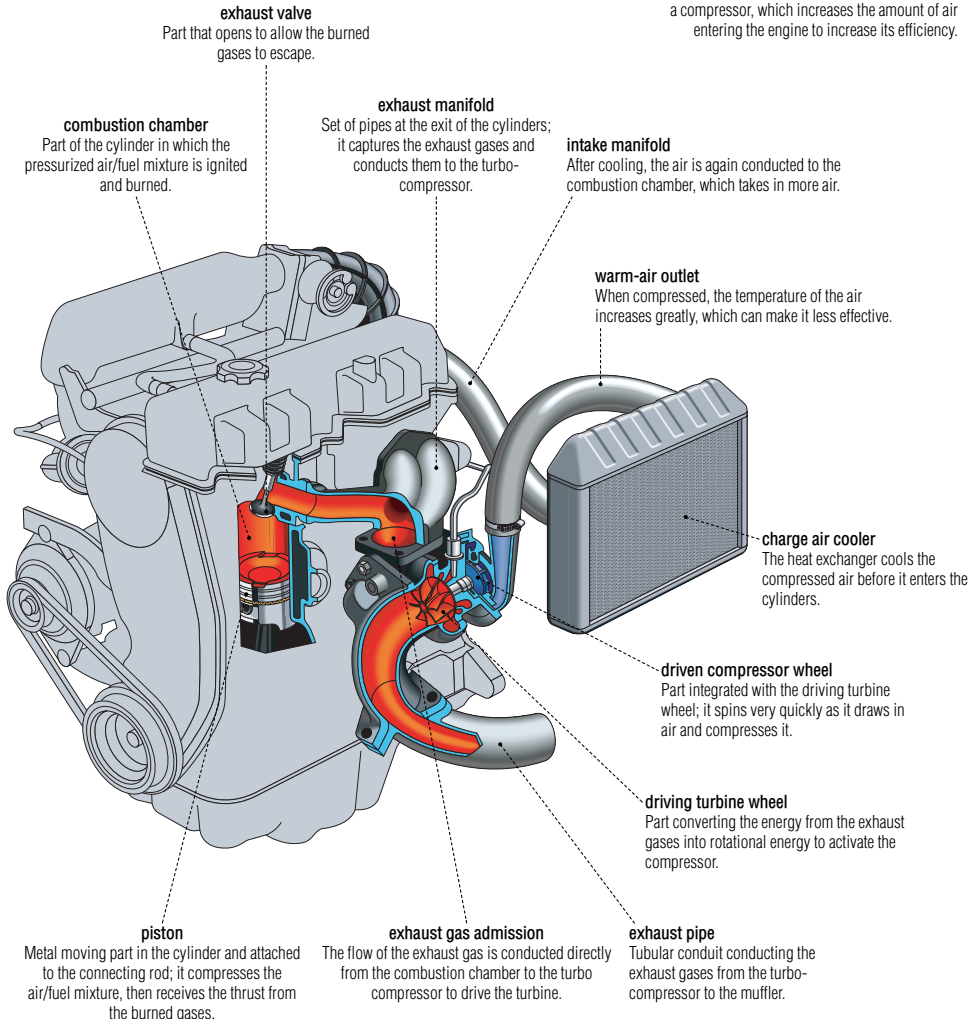
Car powered by an internal combustion engine and an electric motor, reducing gasoline consumption and polluting emissions.



Engines: machines that convert the combustion of an air/fuel mixture into mechanical energy.

### turbo-compressor engine

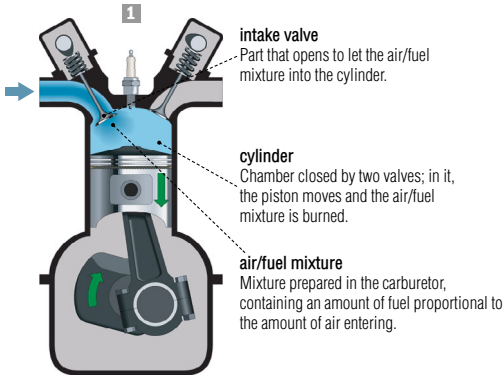
Engine equipped with a device combining a turbine with a compressor, which increases the amount of air entering the engine to increase its efficiency.



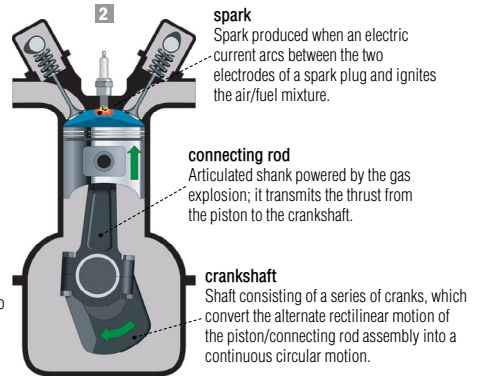
## types of engines

**four-stroke-cycle engine**

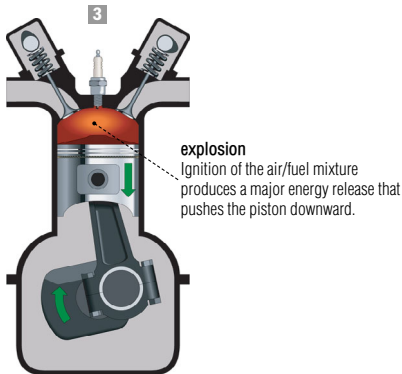
Combustion engine whose cycle (intake, compression, combustion, exhaust) requires two up-and-down movements of the piston.

**intake**

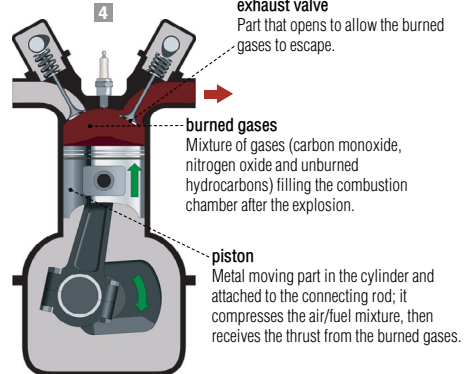
Phase during which the exhaust valve opens and the piston comes down and draws the air/fuel mixture into the combustion chamber.

**compression**

Phase during which the piston goes up to compress the air/fuel mixture. At the height of the compression, the spark plug produces a spark.

**combustion**

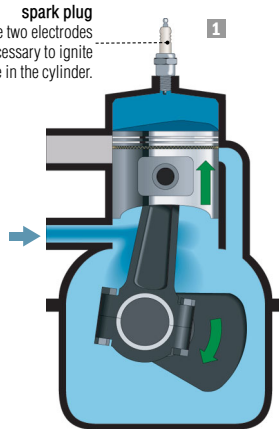
Phase during which the expansion of the combustion gases pushes the piston downward, driving the rotation of the crankshaft.

**exhaust**

Phase during which the exhaust valve opens and the piston moves back up to expel the burned gases.

**two-stroke-cycle engine cycle**

Two-stroke engine: combustion engine whose cycle (intake, compression, combustion and exhaust) requires one up-and-down movement of the piston.

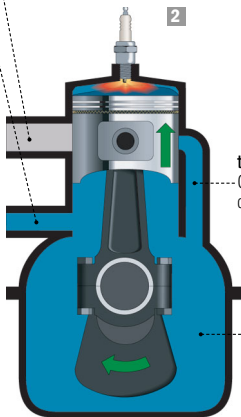


**intake port**  
Conduit through which the air/fuel mixture enters the crankcase.

**exhaust port**  
Conduit through which the burned gases are expelled from the combustion chamber.

**compression/intake**

Beginning of the first stroke during which the piston moves up, drawing the air/fuel mixture into the crankcase and compressing the mixture in the cylinder.

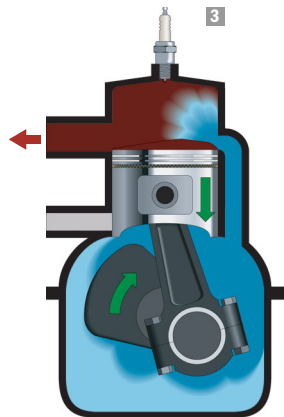


**transfer port**  
Conduit conducting the air/fuel mixture from the crankcase to the cylinder.

**crankcase**  
Sealed enclosure where the air/fuel mixture enters and the piston/connecting rod moves.

**combustion**

End of the first stroke during which a spark ignites the air/fuel mixture.

**exhaust/scavenging**

Second stroke during which the piston is pushed back by the expansion of the burned gases, which are then expelled and replaced by the mixture coming from the crankcase.



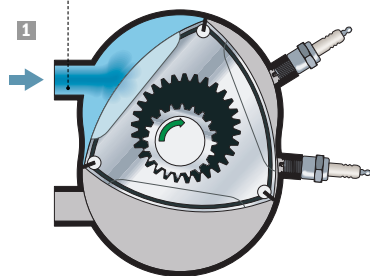
## types of engines

**rotary engine cycle**

Rotary engine: combustion engine in which the combustion chamber is divided by a rotor into three turning parts of unequal volume.

**intake manifold**

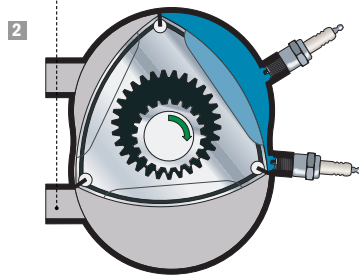
Passages through which the air/fuel mixture enters the cylinder.

**intake**

The air/fuel mixture enters the cylinder through the intake manifold; the rotor's motion forces it into the next chamber.

**exhaust manifold**

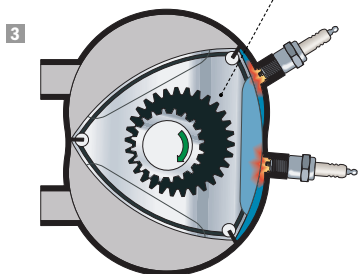
Pipe through which the burned gases are expelled from the cylinder.

**compression**

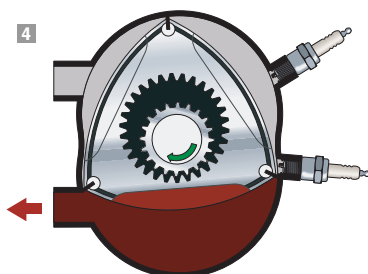
The rotor's rotation reduces the volume in the chamber and compresses the mixture.

**rotor**

Triangular piston turning eccentrically around an axle and transmitting a rotational motion directly to the crankshaft.

**power**

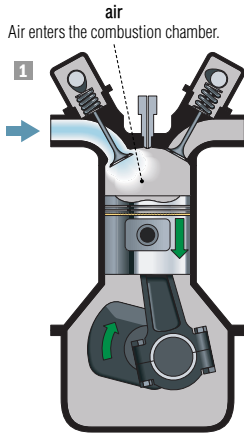
When the compression level is reached, the spark plugs produce sparks that ignite the air/fuel mixture.

**exhaust**

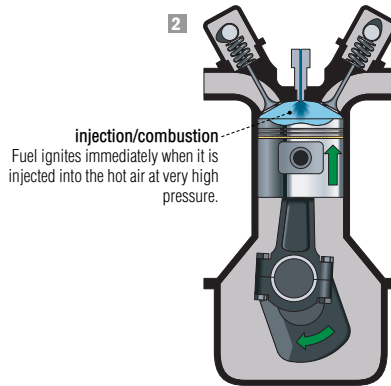
In the passage before the exhaust manifold, the burned gases are expelled by the rotor.

**diesel engine cycle**

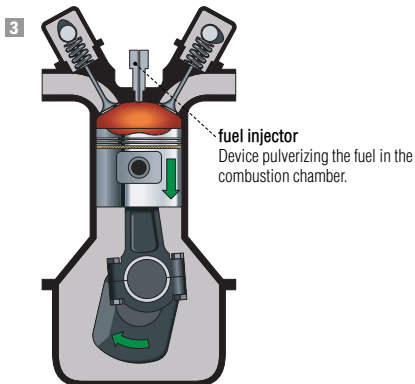
Diesel engine: combustion engine in which the compressed air becomes sufficiently hot to ignite the injected fuel.

**intake**

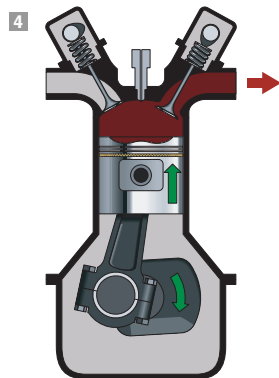
Phase during which the exhaust valve opens and the piston comes down and draws the air/fuel mixture into the combustion chamber.

**compression**

Stroke during which the piston rises, compressing the air, which becomes heated under the pressure.

**power**

Stroke during which the expansion of the burning gases pushes the piston downward.

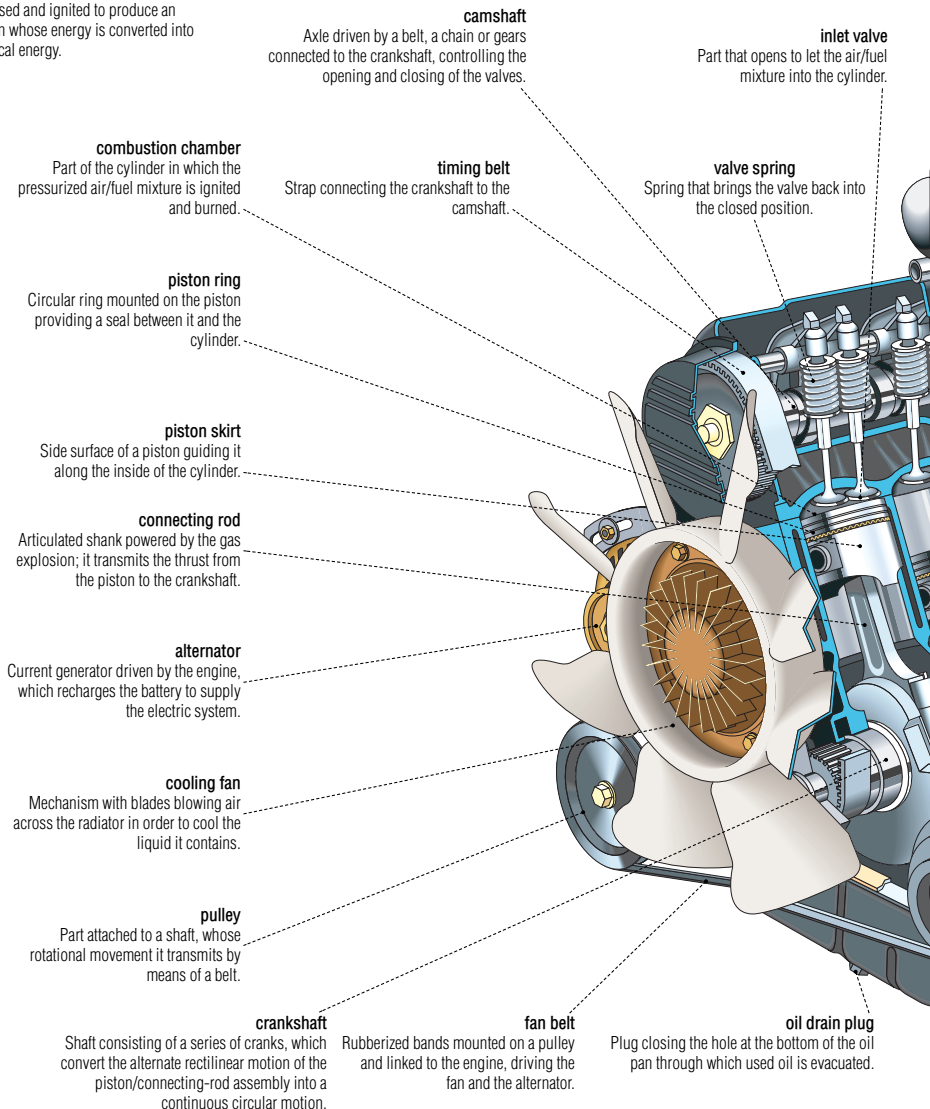
**exhaust**

Phase during which the piston moves up and forces the burned gases toward the exhaust valve.

## types of engines

**gasoline engine**

Engine in which a mixture of air and gasoline is compressed and ignited to produce an explosion whose energy is converted into mechanical energy.

**camshaft**

Axle driven by a belt, a chain or gears connected to the crankshaft, controlling the opening and closing of the valves.

**inlet valve**

Part that opens to let the air/fuel mixture into the cylinder.

**combustion chamber**

Part of the cylinder in which the pressurized air/fuel mixture is ignited and burned.

**timing belt**

Strap connecting the crankshaft to the camshaft.

**valve spring**

Spring that brings the valve back into the closed position.

**piston ring**

Circular ring mounted on the piston providing a seal between it and the cylinder.

**piston skirt**

Side surface of a piston guiding it along the inside of the cylinder.

**connecting rod**

Articulated shank powered by the gas explosion; it transmits the thrust from the piston to the crankshaft.

**alternator**

Current generator driven by the engine, which recharges the battery to supply the electric system.

**cooling fan**

Mechanism with blades blowing air across the radiator in order to cool the liquid it contains.

**pulley**

Part attached to a shaft, whose rotational movement it transmits by means of a belt.

**crankshaft**

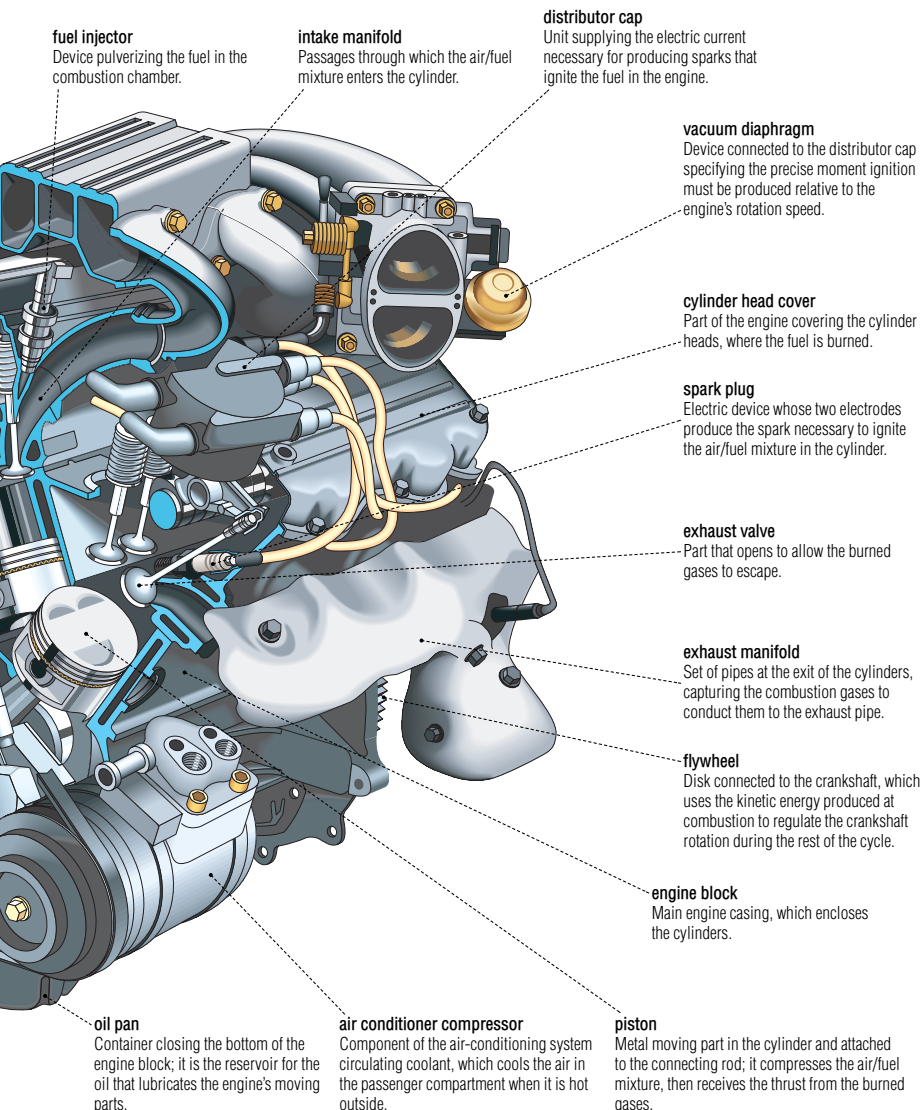
Shaft consisting of a series of cranks, which convert the alternate rectilinear motion of the piston/connecting-rod assembly into a continuous circular motion.

**fan belt**

Rubberized bands mounted on a pulley and linked to the engine, driving the fan and the alternator.

**oil drain plug**

Plug closing the hole at the bottom of the oil pan through which used oil is evacuated.



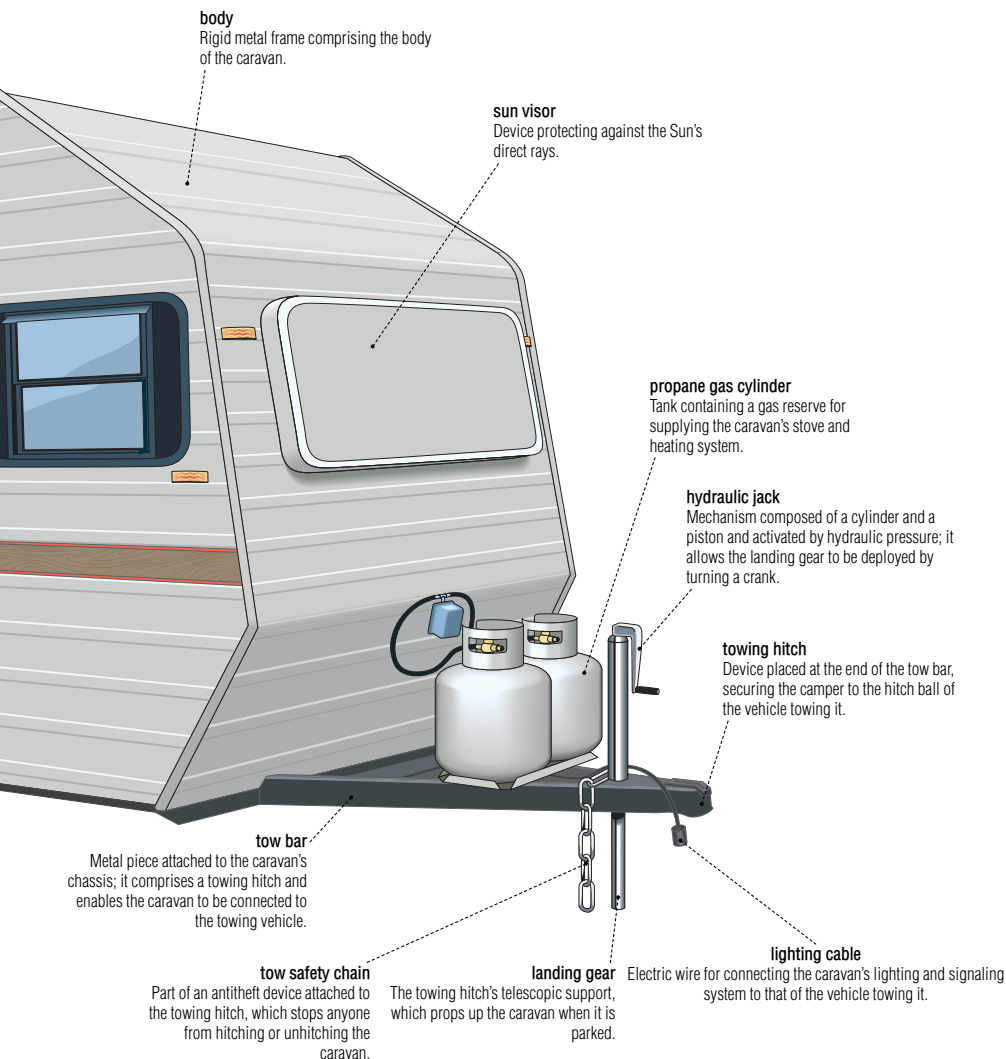
## caravan

Motorized or towed vehicle fitted out as a dwelling.

**trailer**

Caravan fitted out as a dwelling, usually pulled by an automobile.

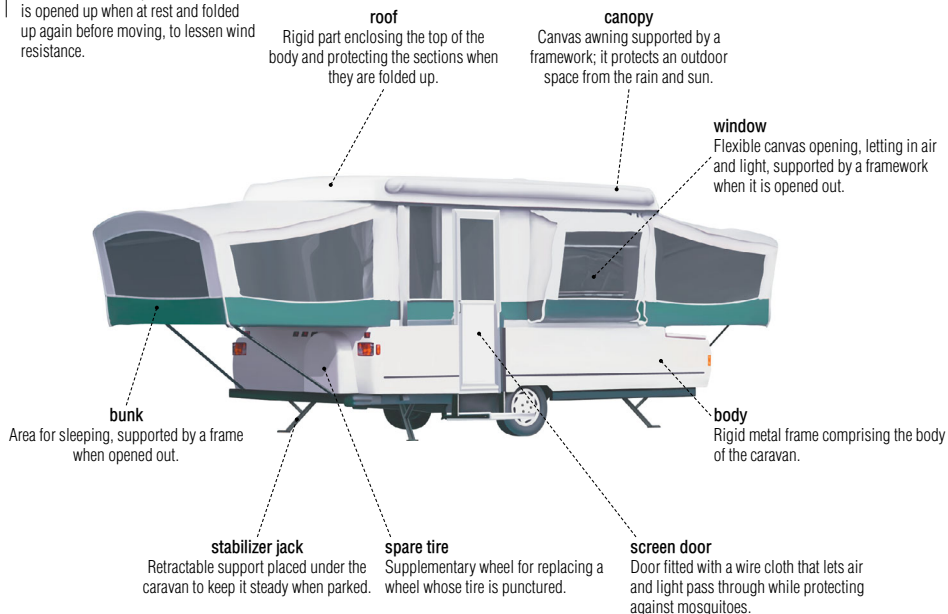




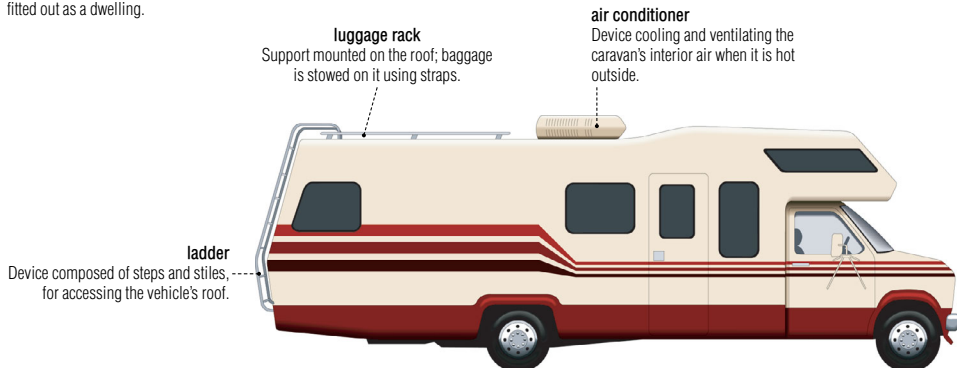
## caravan

**tent trailer**

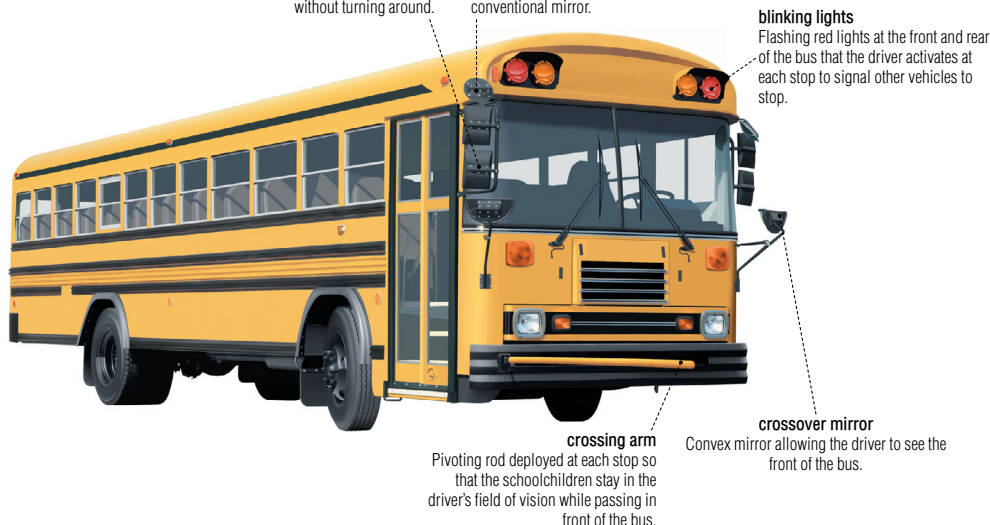
Caravan with a collapsible section that is opened up when at rest and folded up again before moving, to lessen wind resistance.

**motor home**

Van whose passenger compartment is fitted out as a dwelling.



Motorized vehicle for city or intercity transportation of passengers who are standing or seated.





### city bus

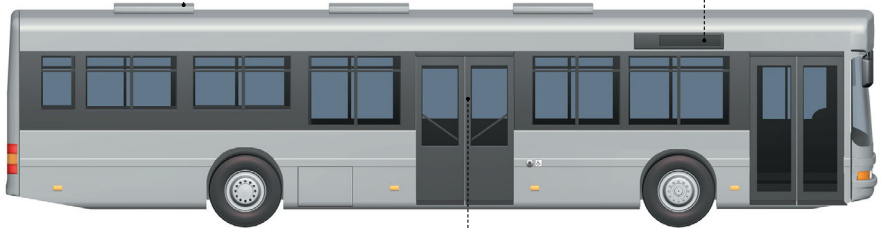
Motorized vehicle for city transportation of passengers who are standing or seated.

#### air intake

Opening in the roof, fitted with a cover, for letting fresh air into the bus.

#### route sign

Screen usually on the front, rear and right side of the vehicle, displaying the number of the bus's route.



#### two-leaf door

Wide door divided into two movable parts, which double back to each side to allow several people to pass through at once.

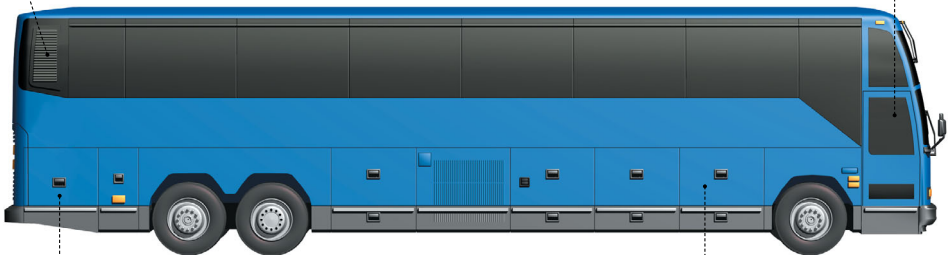
### coach

Motorized vehicle for intercity transportation of seated passengers over medium and long distances.

#### engine air intake

Opening through which outside air enters the vehicle's engine.

#### entrance door



#### engine compartment

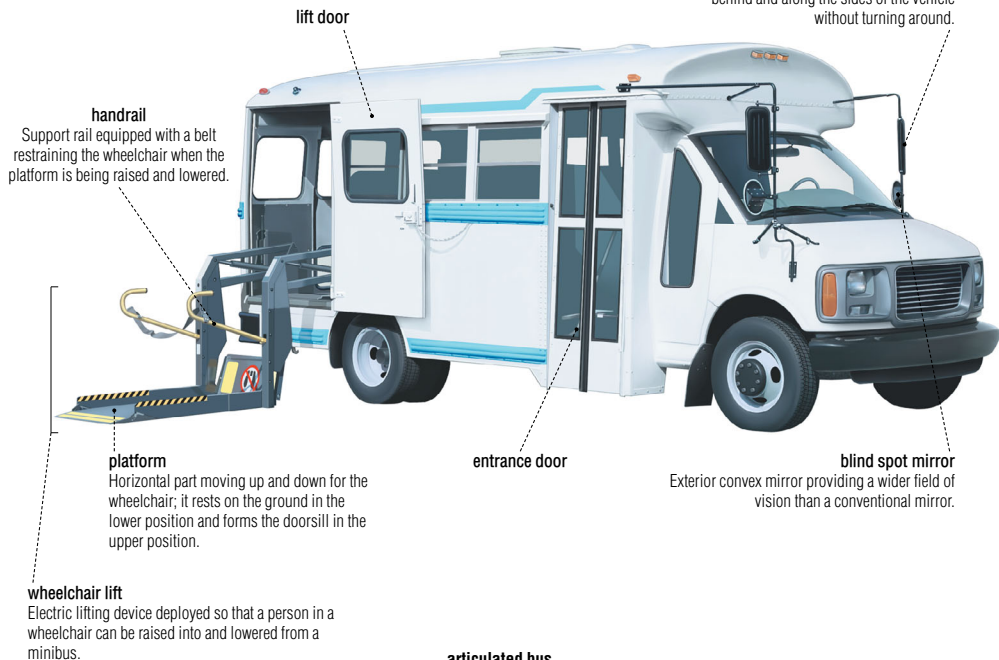
Housing for the engine under the vehicle's chassis, accessible by a door.

#### baggage compartment

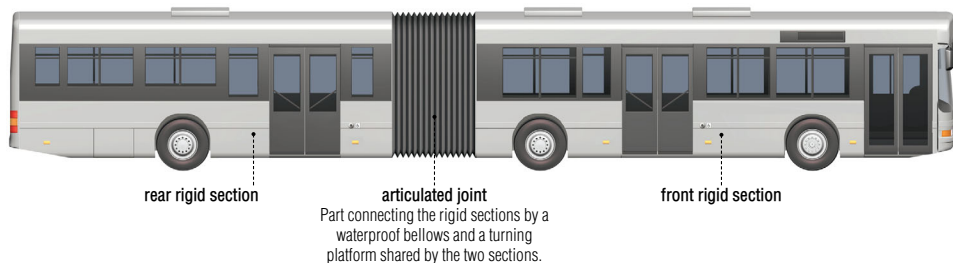
Large compartment beneath the vehicle's floor, fitted with side doors, in which passengers' baggage is deposited.

**minibus**

Motorized vehicle for transporting about 10 passengers, sometimes equipped with a lift for wheelchairs.

**articulated bus**

Bus with two aligned compartments, connected by an articulated joint.

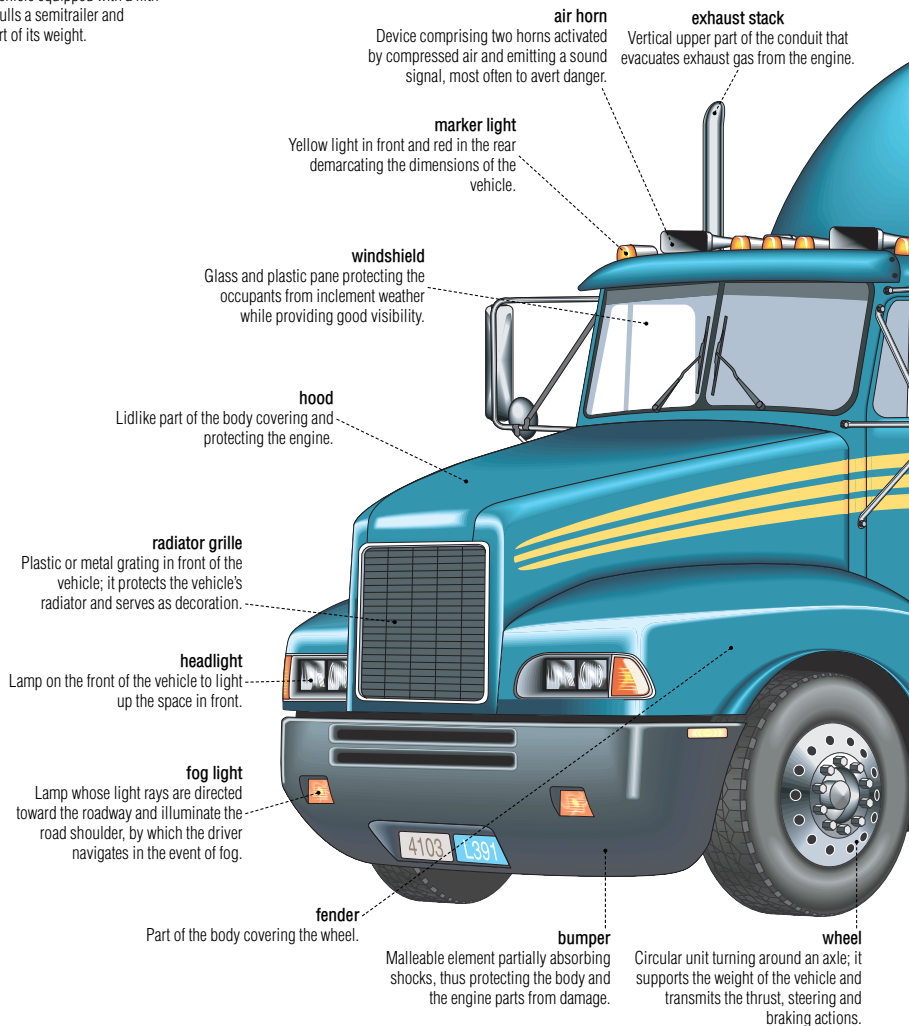


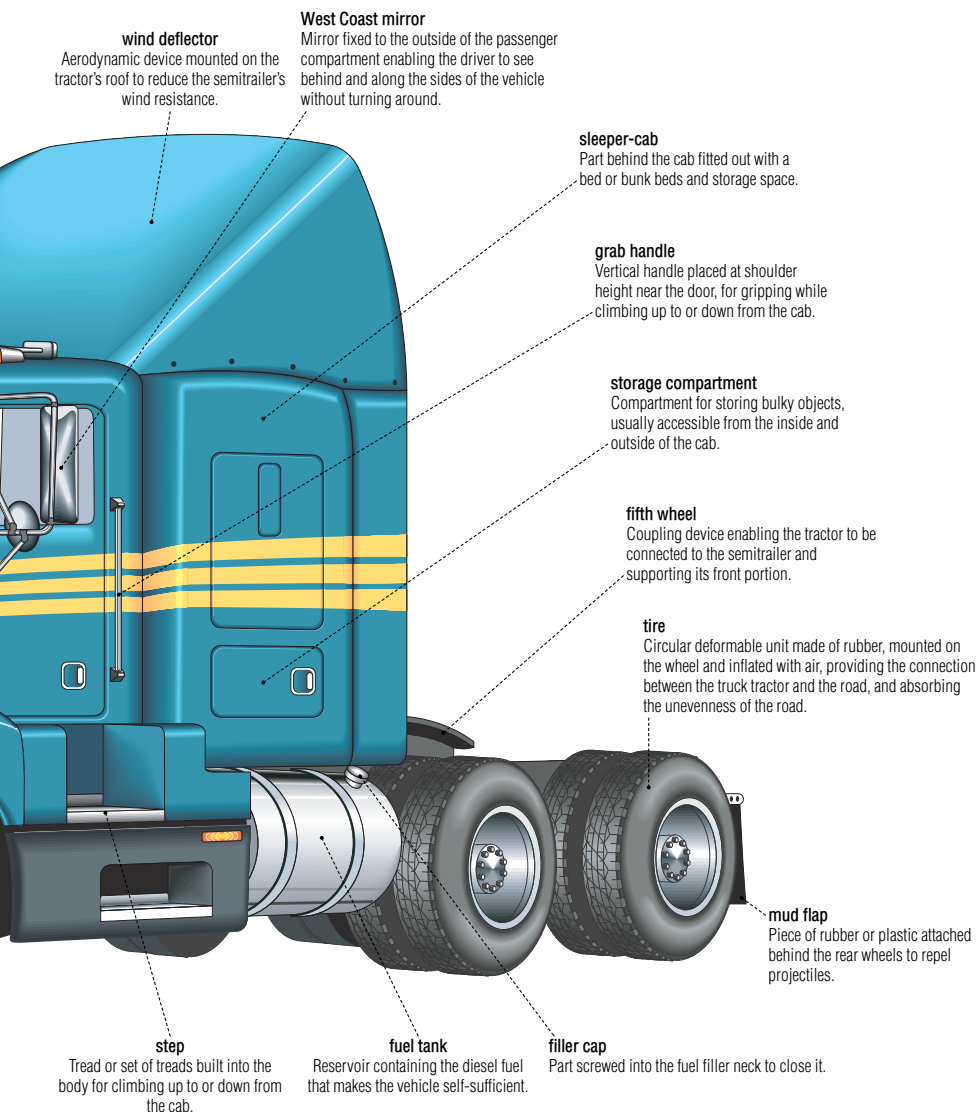
# trucking

Transportation of cargo by truck.

## truck tractor

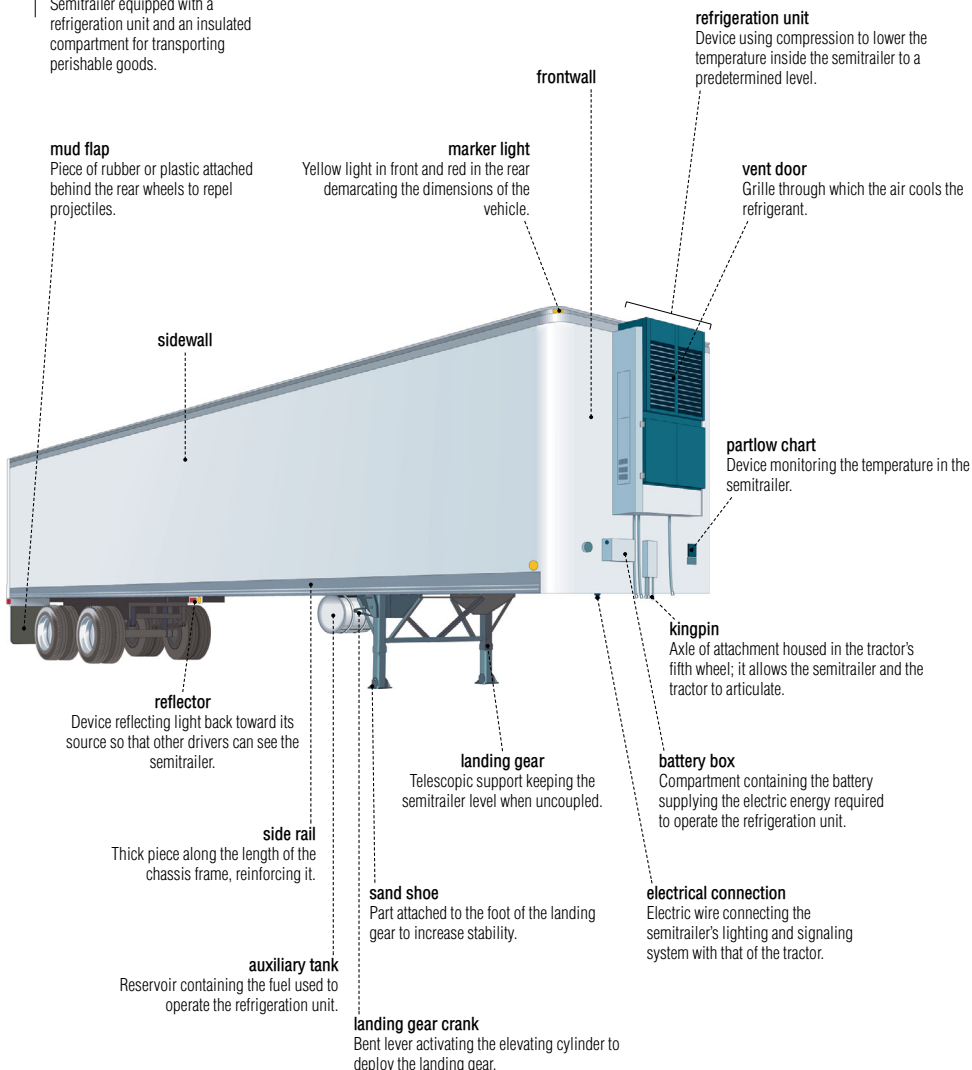
Motorized vehicle equipped with a fifth wheel that pulls a semitrailer and supports part of its weight.





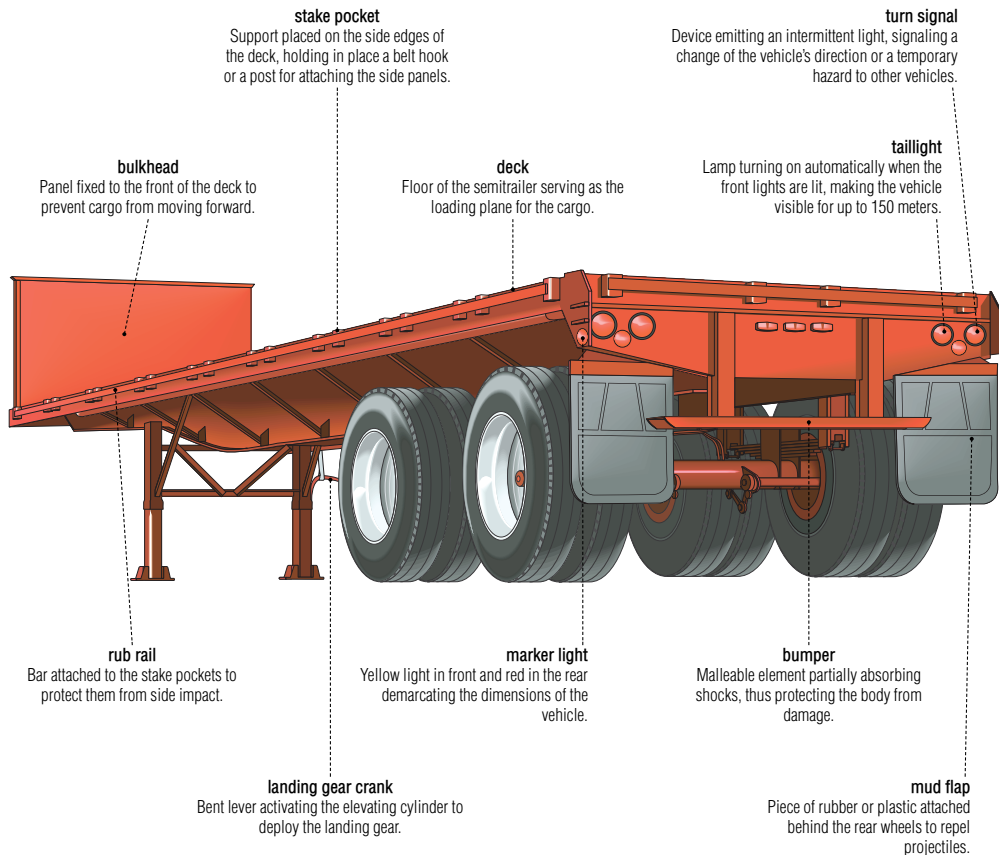
**refrigerated semitrailer**

Semitrailer equipped with a refrigeration unit and an insulated compartment for transporting perishable goods.



**flatbed semitrailer**

Semitrailer composed of a platform around which detachable side panels can be placed.

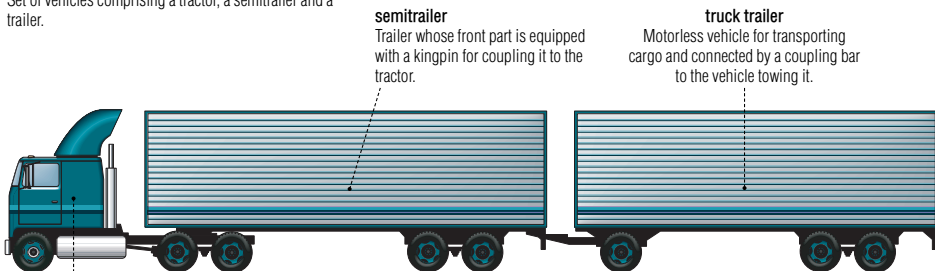


**examples of semitrailers**

Semitrailers: trailers whose front portion is equipped with a kingpin for coupling them to a tractor.

**tandem tractor trailer**

Set of vehicles comprising a tractor, a semitrailer and a trailer.

**semitrailer**

Trailer whose front part is equipped with a kingpin for coupling it to the tractor.

**truck trailer**

Motorless vehicle for transporting cargo and connected by a coupling bar to the vehicle towing it.

**truck tractor**

Motorized vehicle equipped with a fifth wheel that pulls a semitrailer and supports part of its weight.

**tank trailer**

Semitrailer for transporting bulk products in liquid, powder or gas form.

**tank body**

Closed tank divided into several compartments of various sizes.

**container semitrailer**

Semitrailer comprising only a chassis; containers of standard sizes are loaded on it to transport cargo.

**twist lock**

Locking mechanism housed in each bottom corner of the container to secure it to the semitrailer.

**double drop lowbed semitrailer**

Semitrailer for transporting heavy machinery.

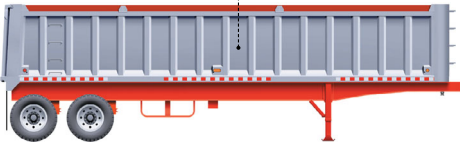



**automobile transport semitrailer**

Semitrailer equipped with several sloped platforms for transporting vehicles.

**dump body**

Open or closed container; when raised by the elevation cylinder, it discharges its bulk material.


**dump semitrailer**

Semitrailer equipped with a dump body for transporting in bulk.


**chip van**

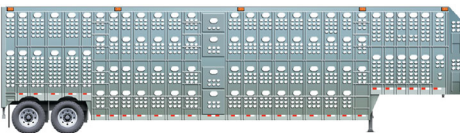
Semitrailer designed to transport wood in chip form.


**van body semitrailer**

Semitrailer comprising a closed box, rigid or made of thick fabric (tarpaulin and sliding curtains).


**refrigerated semitrailer**

Semitrailer equipped with a refrigeration unit and an insulated compartment for transporting perishable goods.


**possum-belly body semitrailer**

Semitrailer designed to transport livestock; it comprises several perforated compartments.


**log semitrailer**

Semitrailer with folding side posts for transporting tree trunks.



**examples of trucks**

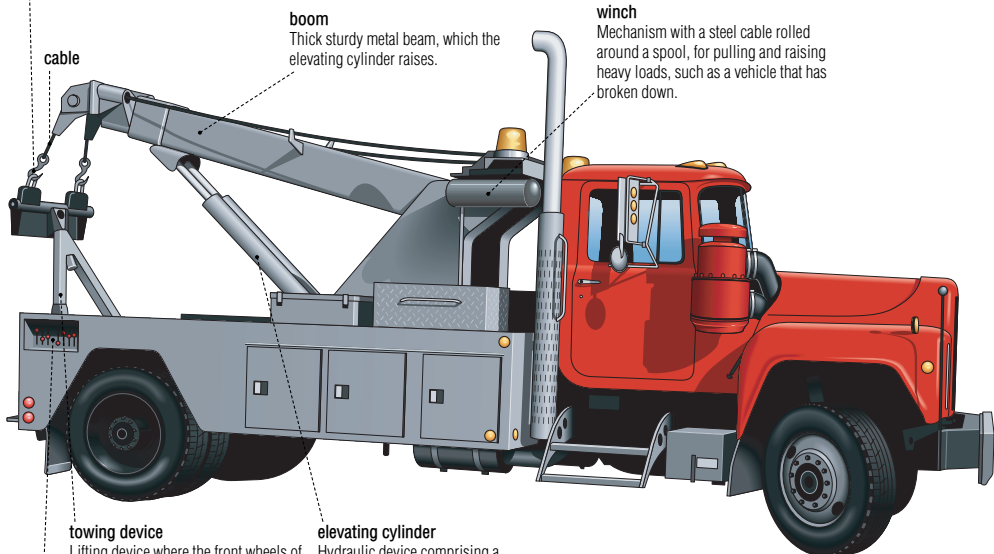
Trucks: motorized vehicles for transporting cargo and providing maintenance and safety.

**tow truck**

Truck for towing vehicles that have broken down.

**hook**

Part that is detached from the towing device while the vehicle's front wheels are placed in position, then reattached to raise it.



**cable**

**boom**

Thick sturdy metal beam, which the elevating cylinder raises.

**winch**

Mechanism with a steel cable rolled around a spool, for pulling and raising heavy loads, such as a vehicle that has broken down.

**towing device**

Lifting device where the front wheels of the towed vehicle are placed.

**elevating cylinder**

Hydraulic device comprising a telescopic arm, for lifting a heavy load.

**winch controls**

Control mechanisms for the electric motor, which powers the spool's rotation.

**van straight truck**

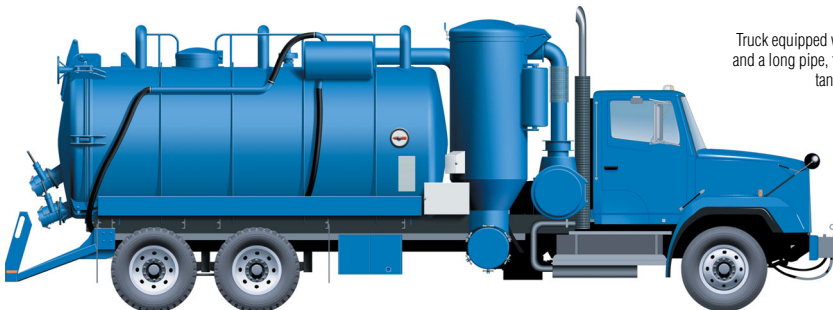
Truck whose box is rigid and closed.

**dump body**

Open or closed container; when raised by the elevation cylinder it discharges its bulk material.

**dump truck**

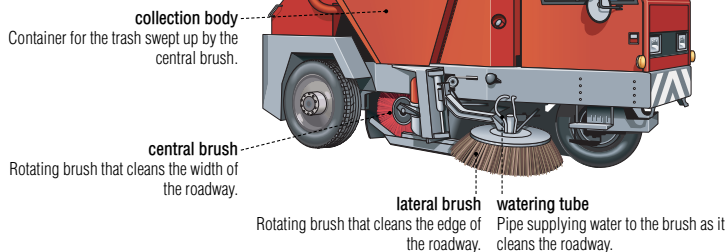
Truck equipped with a dump body; it is used for bulk transport.

**cesspit emptier**

Truck equipped with a tank, a pump and a long pipe, for emptying septic tanks and other pipes.

**street sweeper**

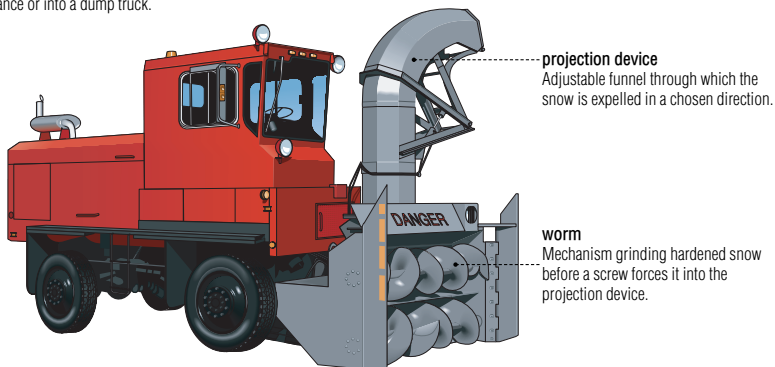
Vehicle for cleaning city streets, equipped with a collection body, rotating brushes, a vacuum cleaner and a watering device.

**detachable body**

Truck for transporting containers, which it loads and unloads using a mechanical arm.

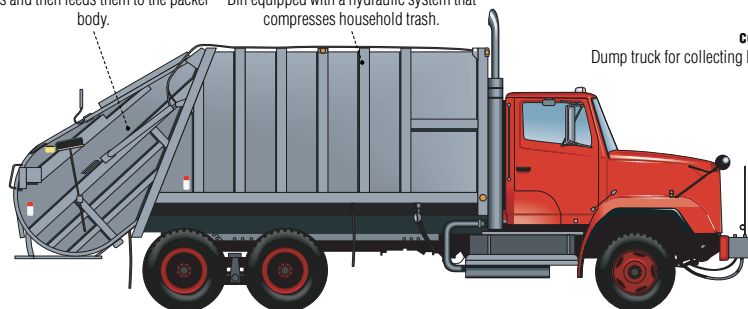
**snowblower**

Vehicle with a mechanism that draws up snow from the road and projects it some distance or into a dump truck.



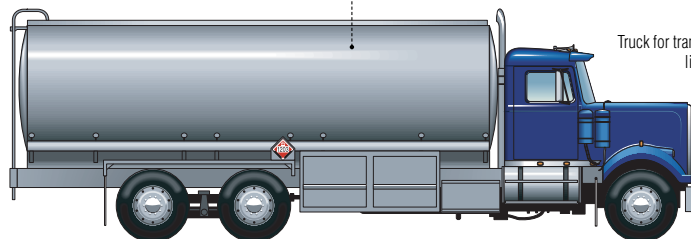
**loading hopper**  
Large reservoir that takes the trash bags and then feeds them to the packer body.

**packer body**  
Bin equipped with a hydraulic system that compresses household trash.



**collection truck**  
Dump truck for collecting household trash.

**tank body**  
Closed tank divided into several compartments of various sizes.



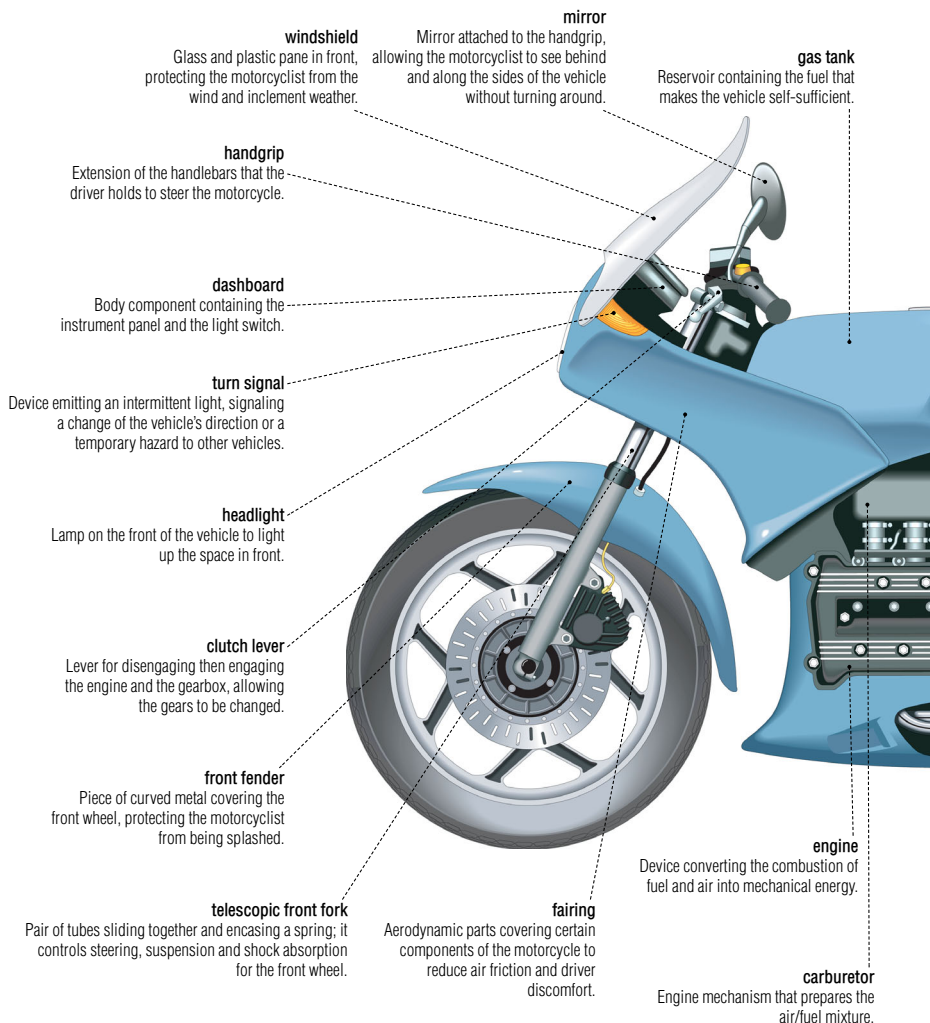
**tank truck**  
Truck for transporting bulk products in liquid, powder or gas form.

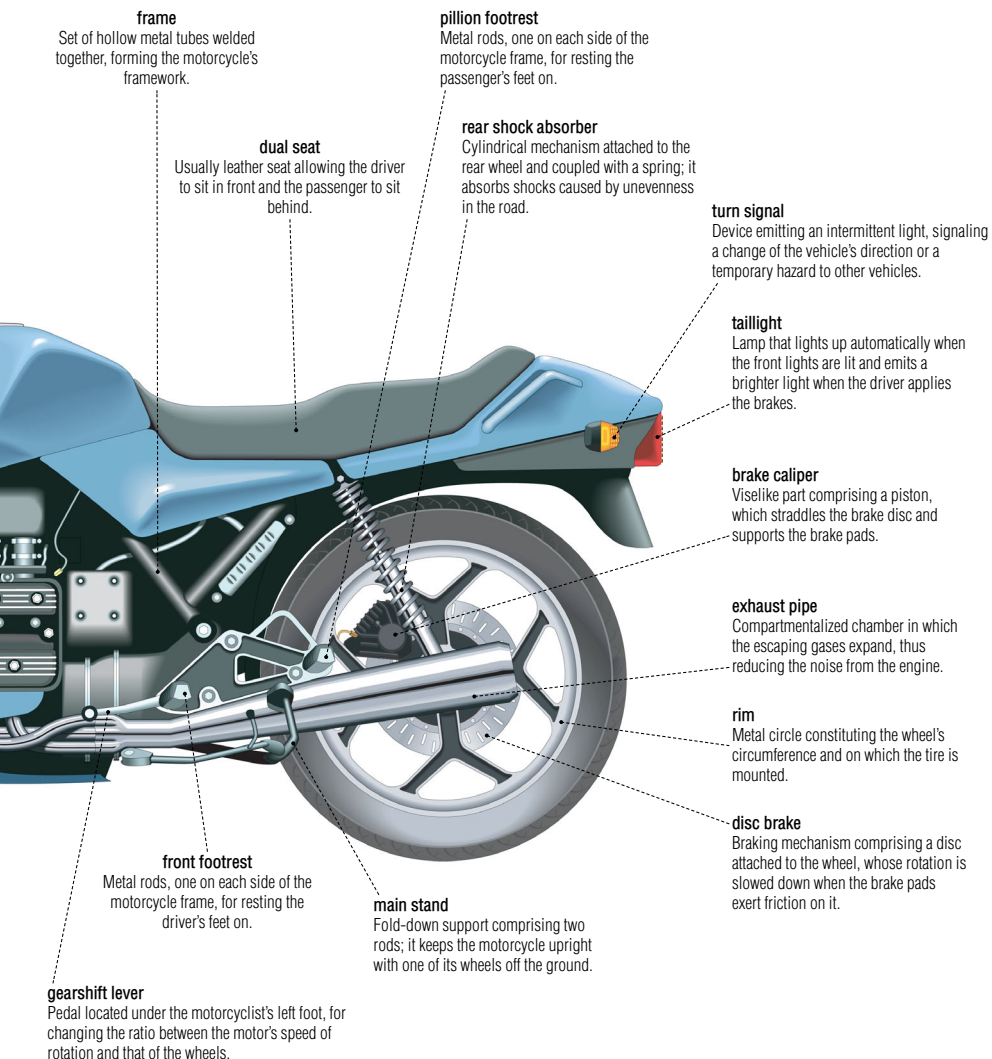


**concrete mixer truck**  
Truck equipped with a rotating tub, for transporting fresh cement, which it pours out down a chute.

## motorcycle

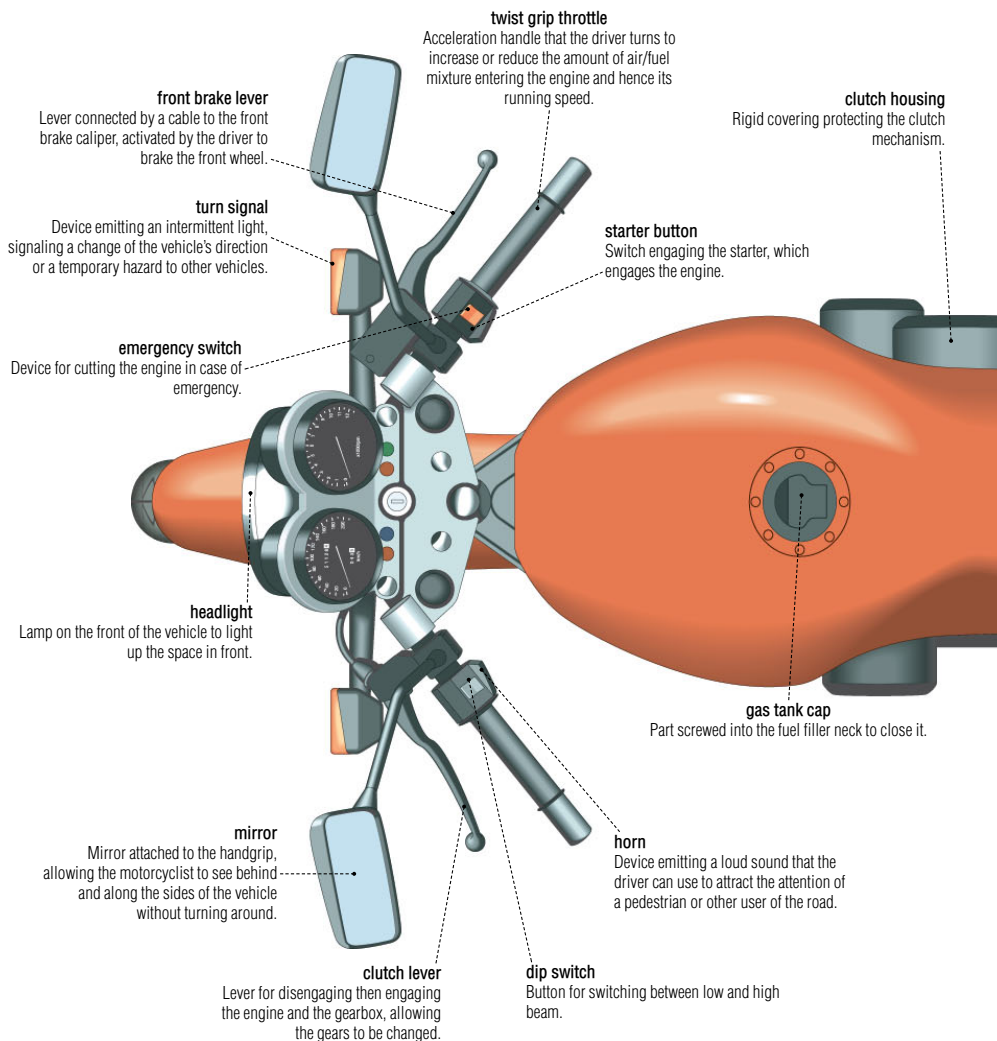
Two-wheeled motorized vehicle whose engine cylinder is larger than 125 cubic centimeters.

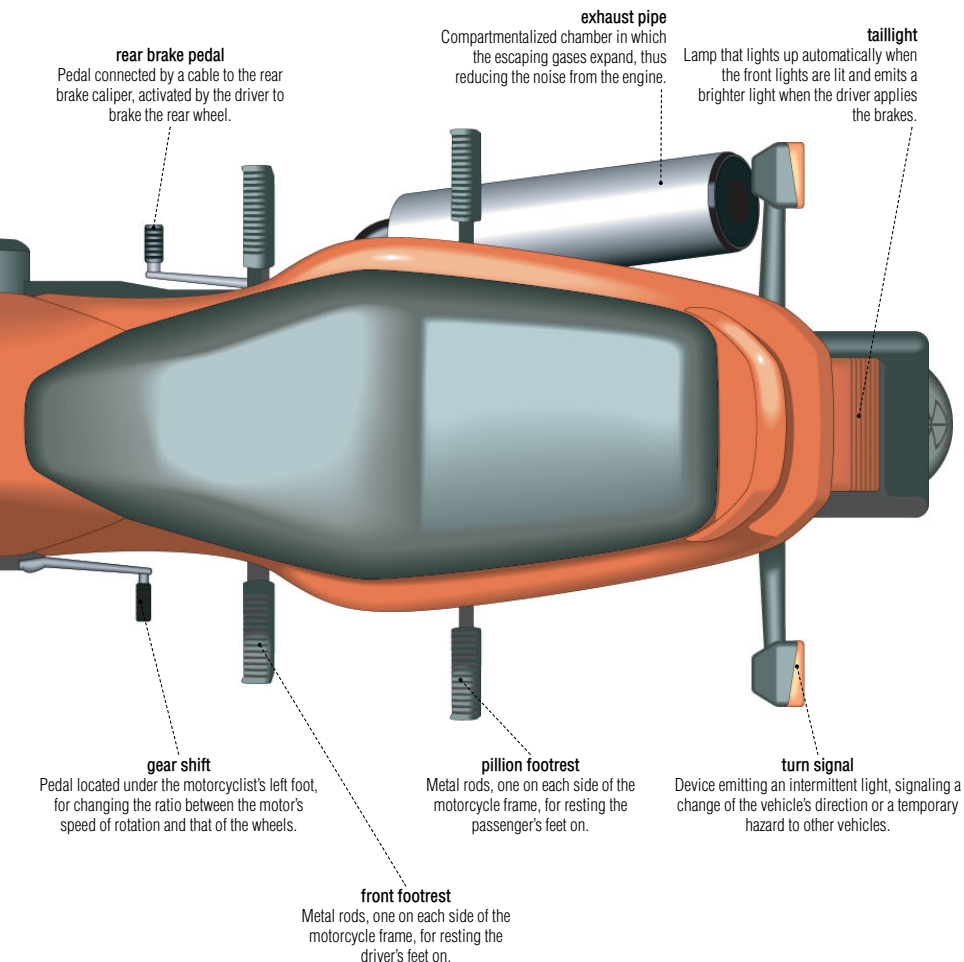




## motorcycle

## motorcycle: view from above



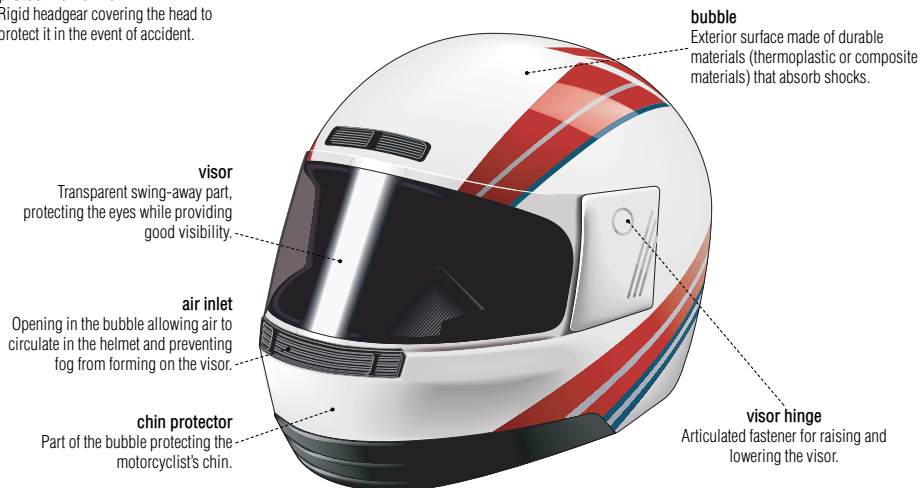




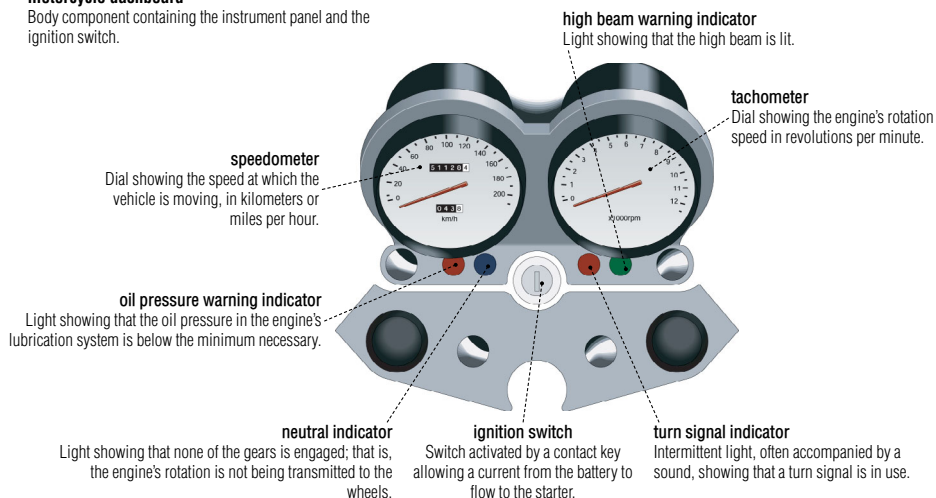
## motorcycle

**protective helmet**

Rigid headgear covering the head to protect it in the event of accident.

**motorcycle dashboard**

Body component containing the instrument panel and the ignition switch.



## examples of motorcycles

**off-road motorcycle**

Motorcycle designed for traveling over rough terrain, with features such as a raised engine, extended suspension, elevated muffler and tires with studs.

**seat**  
Usually leather seat where the driver sits.



**telescopic front fork**  
Pair of sliding tubes enclosing a spring; it controls steering, suspension and shock absorption on the front wheel.

**knobby tread tire**  
Tire whose tread is fitted with blocks of rubber, providing better traction on rough terrain.

**touring motorcycle**

Motorcycle providing comfort for the driver and the passenger, with features such as wide fairing, extended handgrips and footrests for stretching the legs.

**antenna**  
Device receiving radio waves broadcast by a station.

**backrest**  
Part supporting the back.

**top box**  
Usually rigid and waterproof compartment, behind the passenger seat, for stowing light objects.

**passenger seat**  
Usually leather, individual seat with a back; it is higher than the driver seat, for the passenger to sit.

**saddlebag**  
Usually rigid and waterproof luggage, attached to each side of the passenger seat.

**driver seat**  
Usually leather, individual seat, sometimes equipped with a back, for the driver to sit.

**windshield**  
Glass and plastic pane in front, protecting the motorcyclist from the wind and inclement weather.



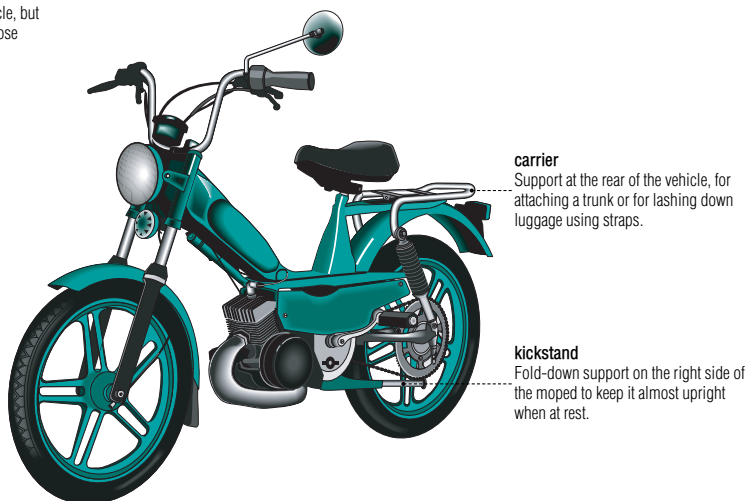
## motorcycle

**motor scooter**

Motorized vehicle with two small wheels, embellished with fairing, characterized by an open frame and a flat floor.

**moped**

Vehicle designed like a bicycle, but equipped with an engine whose cylinder is no larger than 50 cubic centimeters.



## 4 X 4 all-terrain vehicle

Four-wheeled all-terrain vehicle (ATV) for traversing most kinds of terrain, equipped with a motorcycle engine.

**rear fender**

Piece of curved metal covering the rear wheel, for protecting the motorcyclist from being splashed.

**rear cargo rack**

Support at the rear of the vehicle, for attaching a trunk or for lashing down luggage using straps.

**seat**

Usually leather seat where the driver sits.

**gas tank**

Reservoir containing the fuel that makes the vehicle self-sufficient.

**handgrip**

Extension of the handlebars used for steering the ATV.

**bumper**

Malleable component partly absorbing impact in the event of a front-on collision.

**gearshift lever**

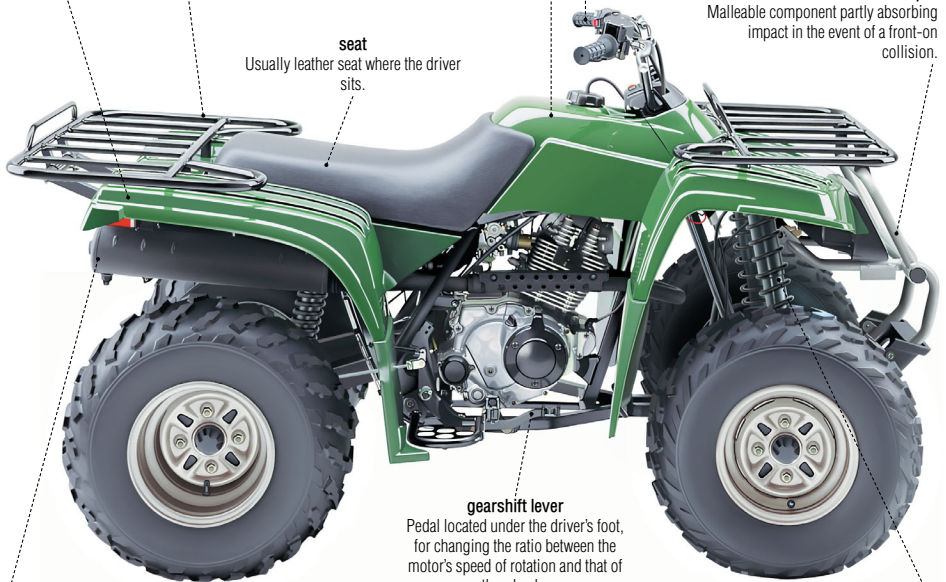
Pedal located under the driver's foot, for changing the ratio between the motor's speed of rotation and that of the wheels.

**muffler**

Compartmentalized chamber in which the escaping gases expand, thus reducing the noise from the engine.

**front shock absorber**

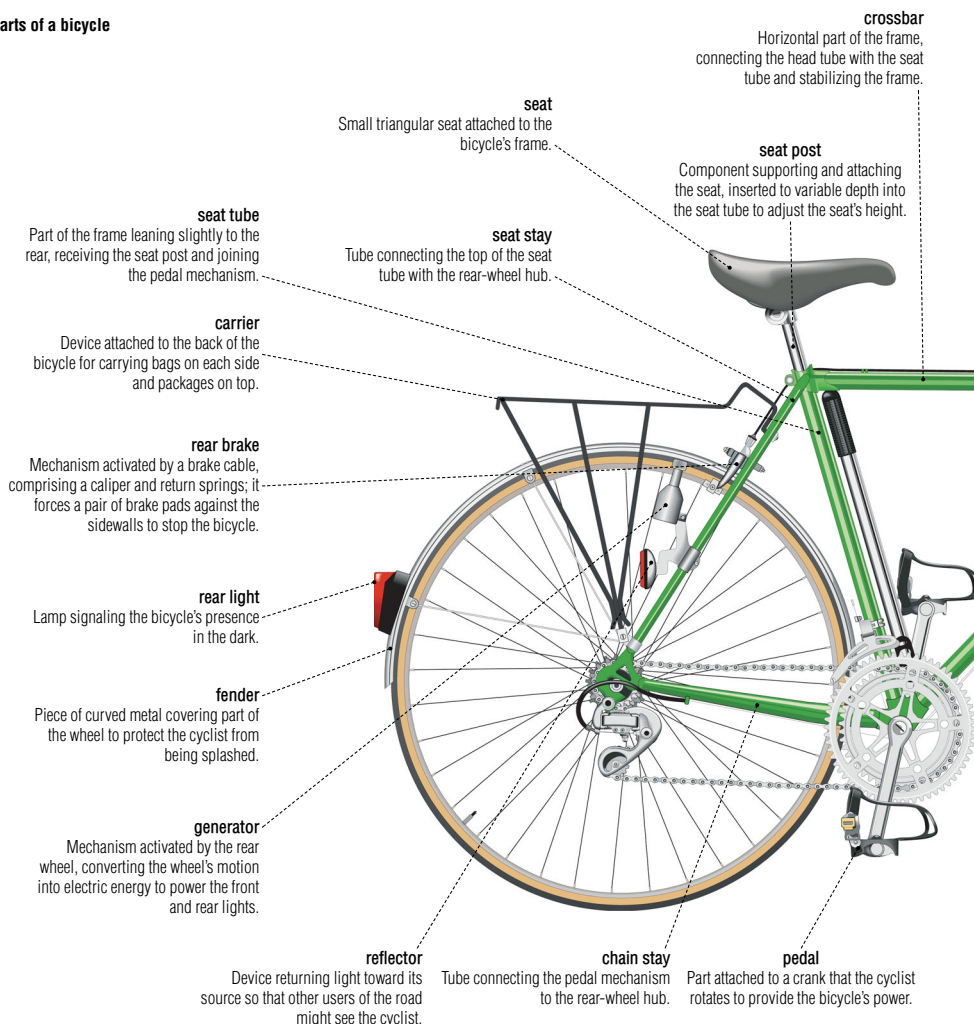
Cylindrical mechanism attached to the front wheel and coupled with a spring; it absorbs shocks caused by unevenness in the road.

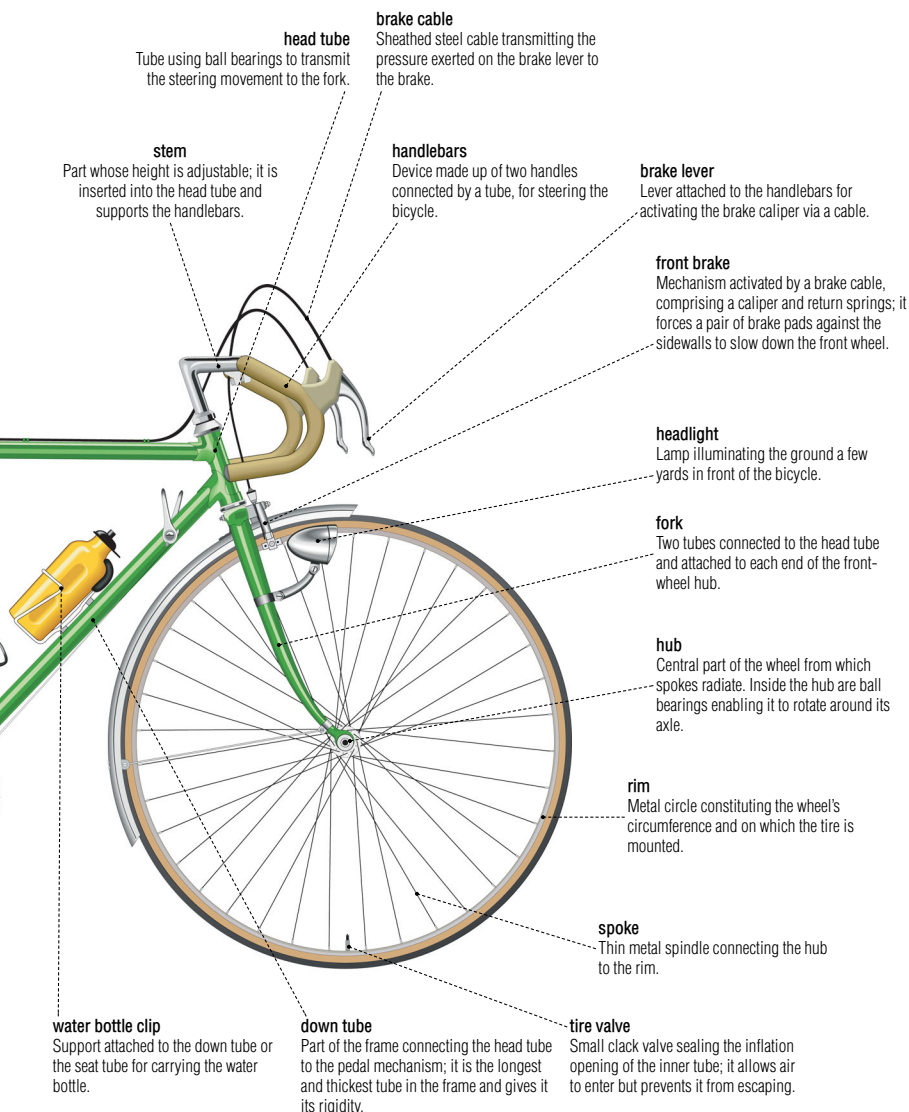


## bicycle

Frame vehicle steered by the front wheel and propelled by the rear wheel, which in turn is driven, via a chain, by a pedal mechanism.

## parts of a bicycle





## bicycle

**power train**

Set of parts (axle, chain wheel, cranks and pedals) transmitting the force exerted by the cyclist on the pedals to the rear wheel.

**chain guide**

Part of the derailleur moving the chain from one chain wheel to the other.

**front derailleur**

Mechanism for changing the front gears by lifting the chain from one chain wheel to another; it allows the cyclist to adapt to road conditions.

**shifter**

Lever for changing gears via a cable moving the derailleur.

**freewheel**

Mechanism attached to the rear-wheel hub allowing it to continue turning when the cyclist stops pedaling.

**toe clip**

Metal device attached to the pedals that covers the front of the feet, keeping the feet in the proper position and increasing pedaling power.

**chain**

Set of metal links meshing with the sprockets on the chain wheel and gear wheel to transmit the pedaling motion to the rear wheel.

**control cable**

Wire made of steel strands transmitting the action exerted on the shifter to each derailleur.

**chain wheel A**

Larger wheel with sprockets that, in combination with the rear gear wheels, increases the distance of one rotation of the pedal, and therefore the speed of the bicycle.

**bottom bracket axle**

Tube to which the crank is attached at each end so that one end is up when the other is down.

**chain wheel B**

Smaller wheel with sprockets that, in combination with the rear gear wheels, decreases the distance of one rotation of the pedal.

**rear derailleur**

Mechanism for changing the rear gears by lifting the chain from one gear wheel to another; it allows the cyclist to adapt to road conditions.

**pedal**

Part attached to a crank that the cyclist rotates to provide the bicycle's power.

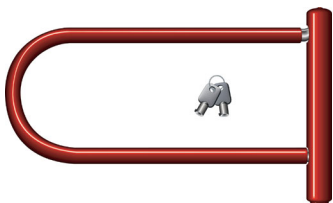
**crank**

Metal part bent at a right angle, supporting a pedal and providing a rotational movement around the pedal's axle.

**jockey rollers**

Small wheels guiding the chain and keeping it taut while changing gears.



**lock**

Antitheft system made up of two metal shanks, one inserted into the other and fitted with a lock, for locking the bicycle to a fixed object.

**protective helmet**

Rigid headgear covering the head to protect it in the event of accident.

**bicycle bag**

Bag that can be attached to the handlebars or the carrier.

**tool kit**

Set of tools for simple repairs and adjustments, such as fixing a flat tire, replacing spokes or adjusting brakes.

**child carrier**

Seat attached to the frame or the carrier, comprising a harness and footrests, for transporting a child.



## bicycle

## examples of bicycles

**Dutch bicycle**

City bicycle designed for comfort and in such a way that the cyclist sits upright; its features include a built-in chain guard and a drop-down fender.

**BMX bike**

Strong small bicycle, for acrobatics and competitions on bumpy tracks.

**city bicycle**

Bicycle designed for comfort and safety while taking short trips on city streets.

**mountain bike**

Bicycle with large wheels with treads with studs, a strong frame, numerous gears and powerful brakes, for navigating all kinds of terrain.

**road bicycle**

Bicycle with narrow tires, lightweight frame and handlebars that position the cyclist for optimum aerodynamics, designed for road racing.

**child's tricycle**

Very stable three-wheeled vehicle with pedals driving either the front wheel or the rear wheels, for the use of young children.

**touring bicycle**

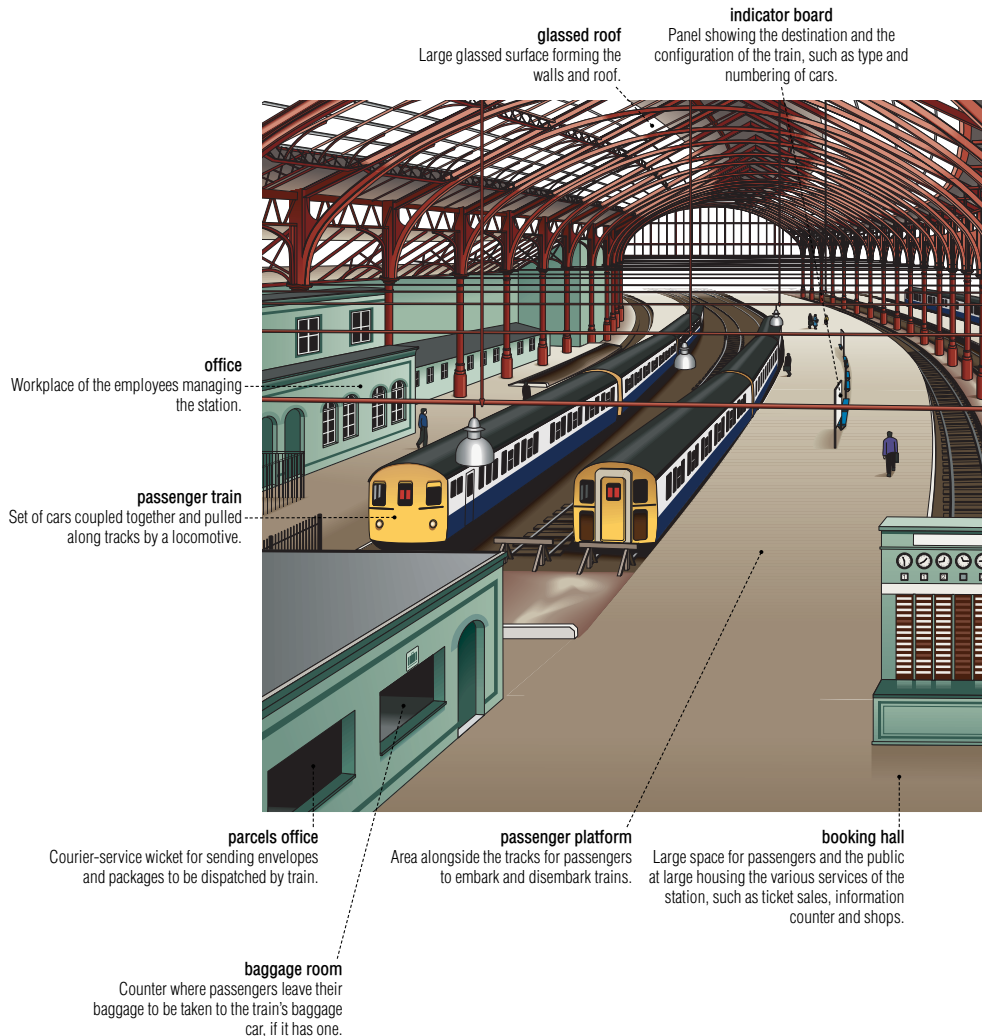
Intermediate bicycle between a road bicycle and a city bicycle, designed for traveling long distances in comfort.

**tandem bicycle**

Bicycle with two places; both cyclists pedal simultaneously but only the person in front steers.

## passenger station

Covered building for the public where trains and passengers arrive and depart.



**metal structure**

Set of metal components comprising the skeleton of a building and supporting its roof; here, the roof is made of glass.

**baggage cart**

Four-wheeled handcart available to passengers for transporting baggage inside the station.

**platform number****track**

A pair of parallel rails laid end to end and on which trains run.

**ticket collector**

Person checking that passengers' tickets correspond to their destinations.

**schedules**

Grid showing the departure and arrival times of the trains, their number and their destination or point of departure.

**platform edge**

Zone along the edge of the platform, usually demarcated by a safety line.

**baggage lockers**

Metal compartments for keeping luggage temporarily for a small fee.

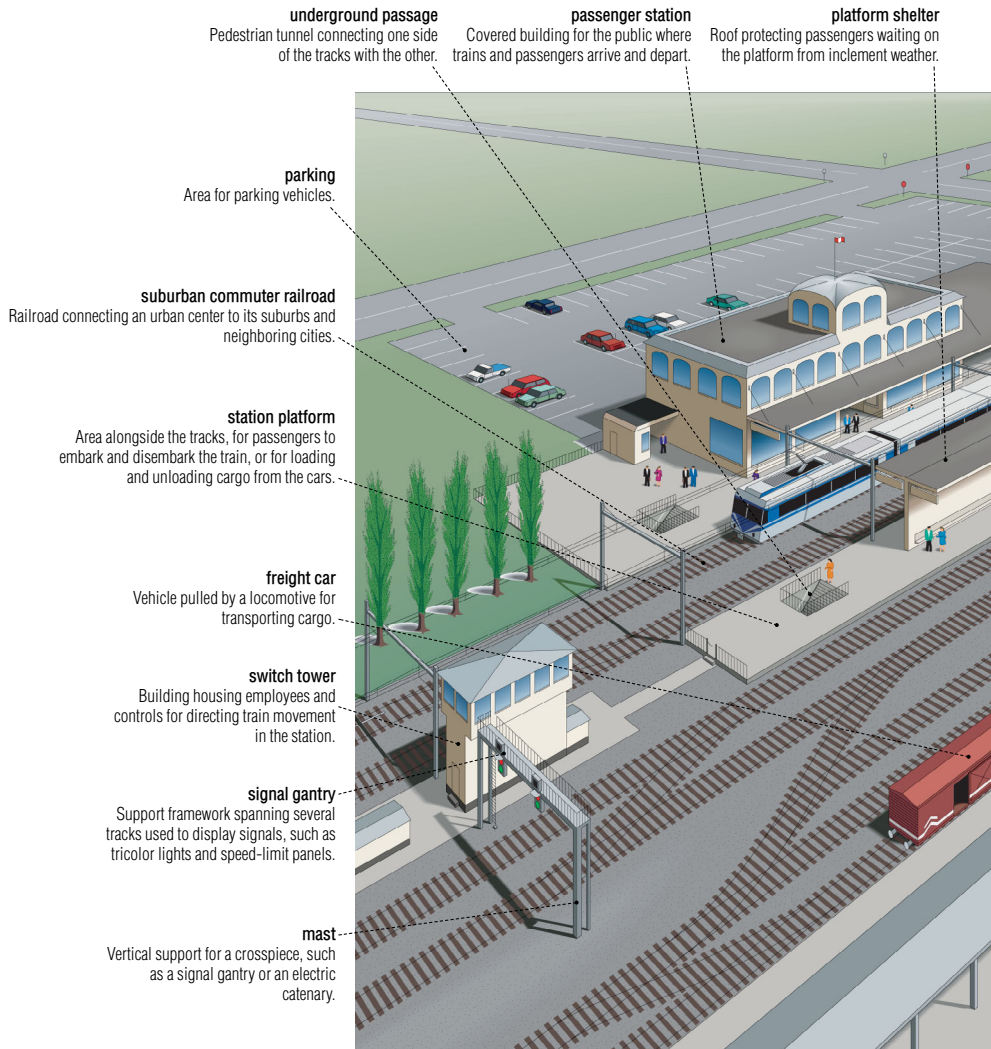
**destination**

Name of the last station where the train stops at the end of its route.

**departure time indicator**

## railroad station

Covered building for the public where trains and passengers arrive and depart.





**commuter train**

Local train running frequently each day between an urban center and its suburbs or neighboring cities.

**footbridge**

Elevated walkway for passengers to cross over a set of tracks.

**semaphore**

Light for relaying information such as the speed of trains and the distance between them.

**main line**

Tracks for trains traveling long distances.

**level crossing**

Intersection of a railroad and a road, with or without warning lights.

**bumper**

Buffer placed at the end of a track stopping the train from running off the end of the track.

**subsidiary track**

Side track not used for railroad traffic but for shunting, marshaling or loading and unloading.

**diesel shop**

Building for maintaining and refueling diesel locomotives.

**freight station**

Set of railroad installations and buildings required for transporting cargo.

**switch**

A pair of movable track rails (switch rails) for guiding the train from one track to another.

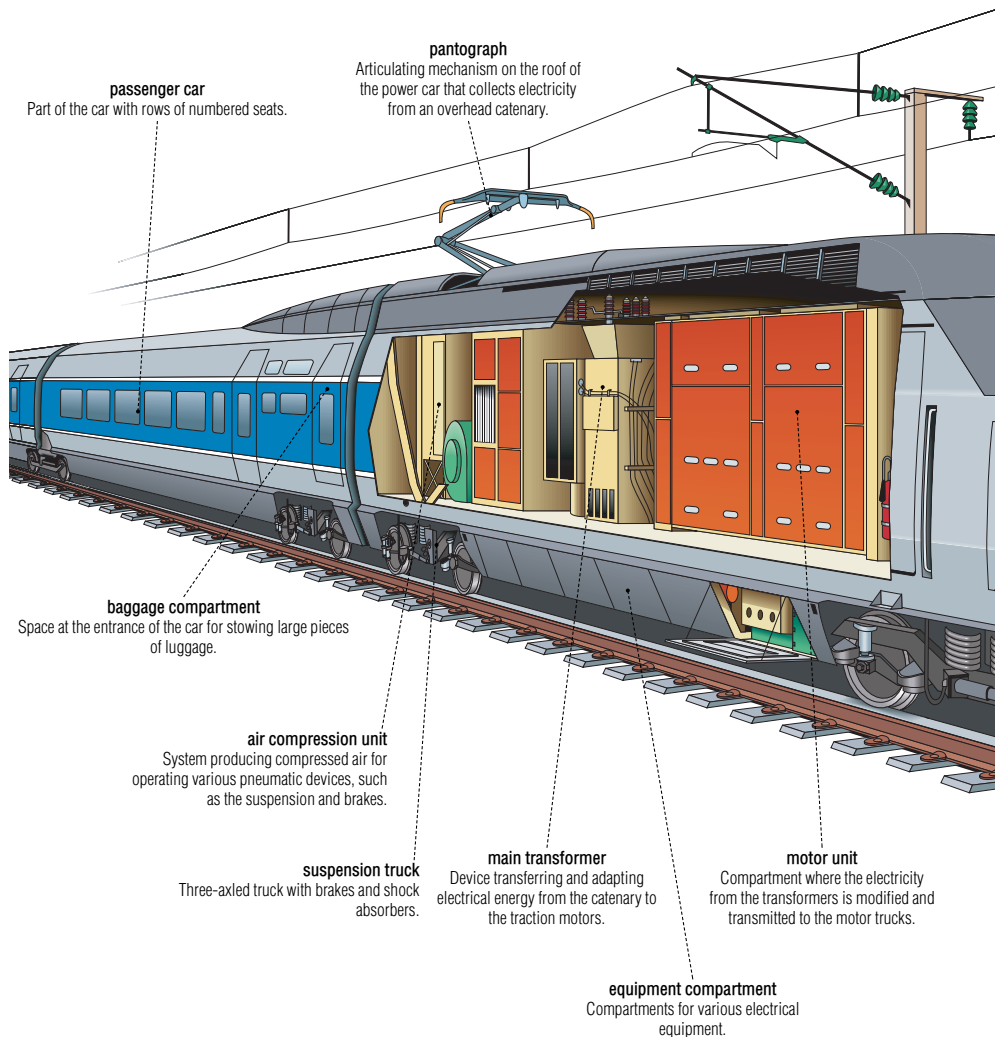
**scissors crossing**

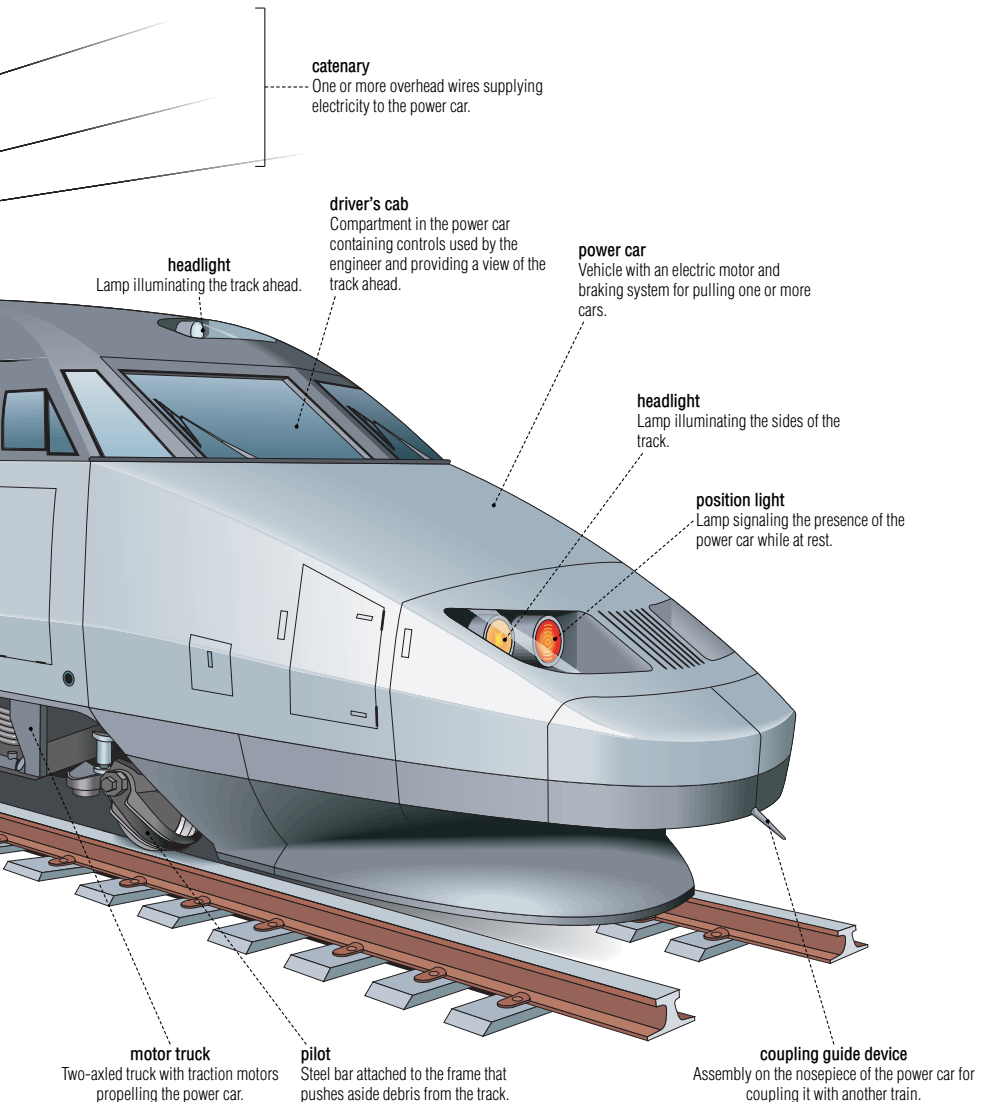
Track enabling a train to change tracks.



# high-speed train

High-speed passenger train (between 135 and 190 mph) powered by electricity, with a power car at each end and a limited number of cars in between.

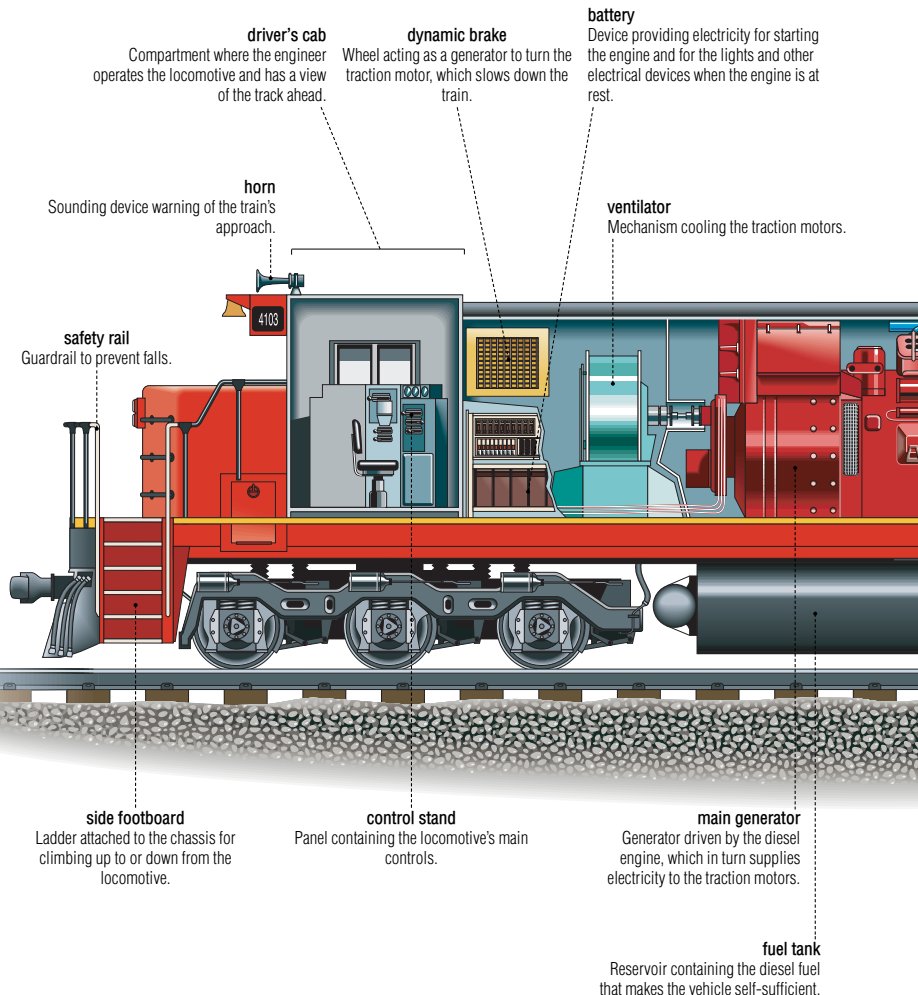


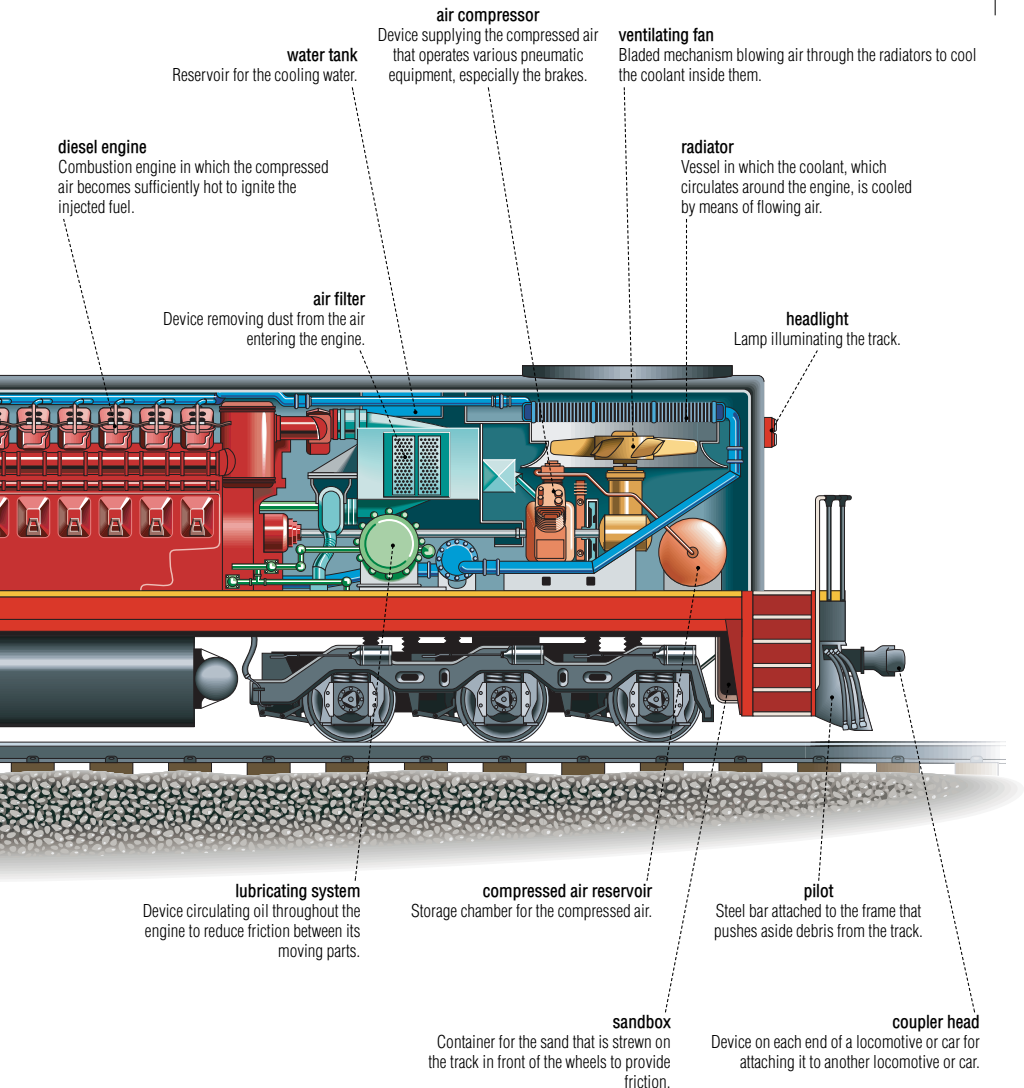




# diesel-electric locomotive

Vehicle with a diesel engine turning a generator that in turn powers the electric traction motors.





## diesel-electric locomotive

**truck**

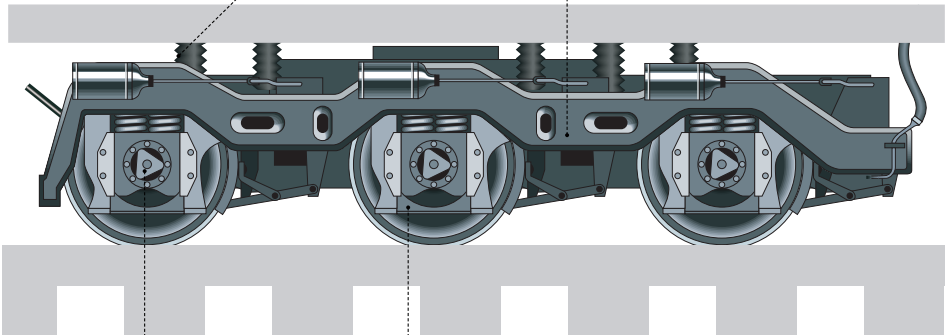
Two- or three-axled carriage whose wheels are guided by the track; it supports a locomotive or a car.

**spring**

Part absorbing vibrations caused by the wheels as they move along the track.

**truck frame**

Framework supporting the axles, suspension, brakes and traction motors.

**axle**

Transversal part under a vehicle passing through the hubs of the wheels, which support it.

**journal box**

Part connecting the axle to the truck frame.

## types of passenger cars

Cars: vehicles with various layouts that are pulled by locomotives, for transporting and providing services to passengers.

**coach car**

Car with two rows of benches or seats for transporting passengers in the seated position.

**luggage rack**

Space at the entrance of the car for stowing large pieces of luggage.

**adjustable seat**

Seat whose back can be changed from a sitting position to a reclining position.

**center aisle**

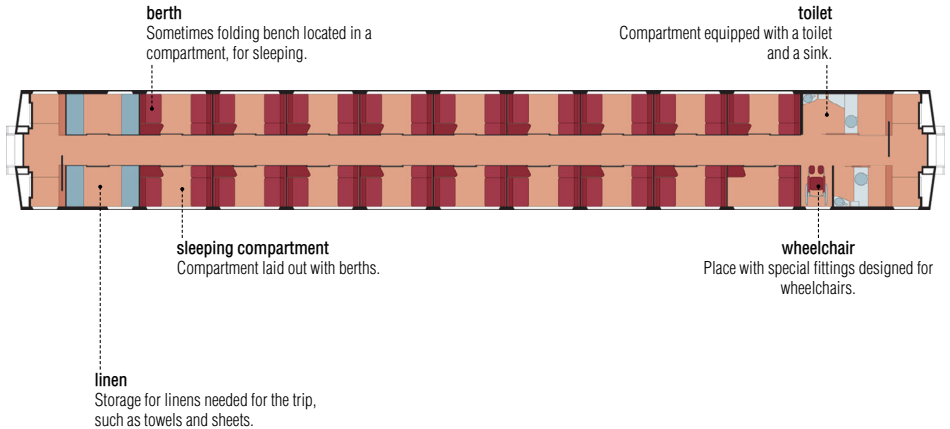
Walkway between the two rows of benches or seats, for going from one end of the car to the other.

**vestibule**

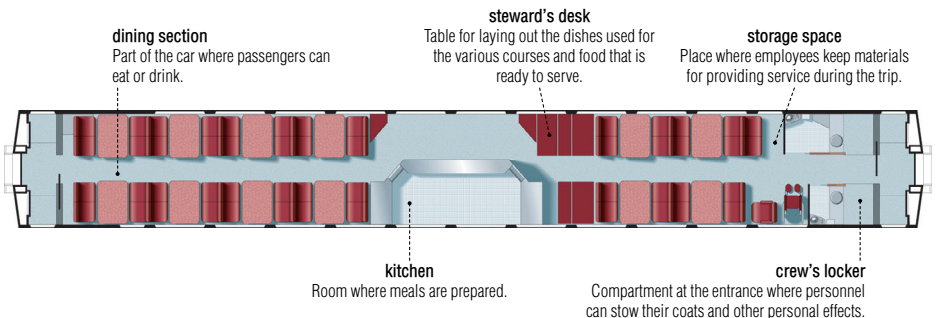
Entrance compartment of the car.

**sleeping car**

Car with compartments laid out as small bedrooms.

**dining car**

Car laid out for serving meals.

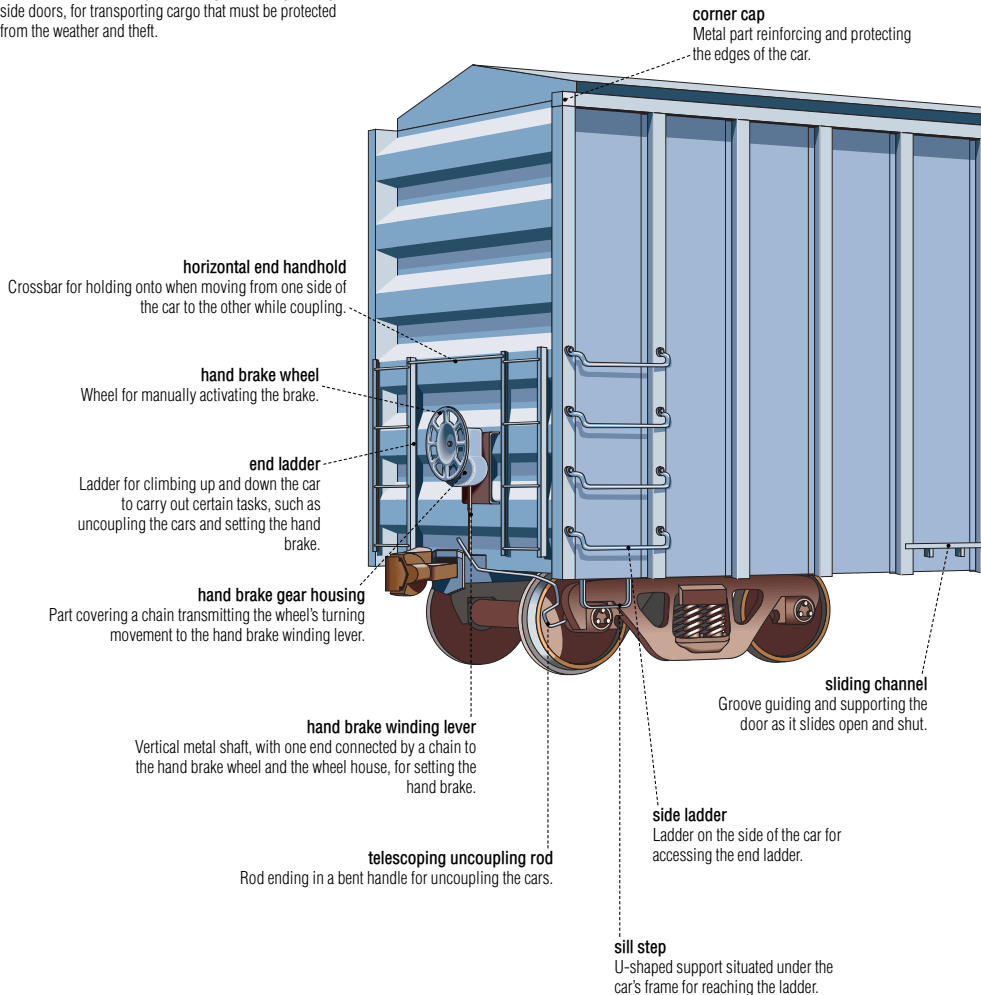


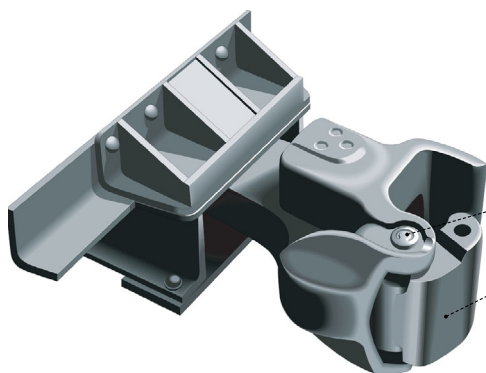
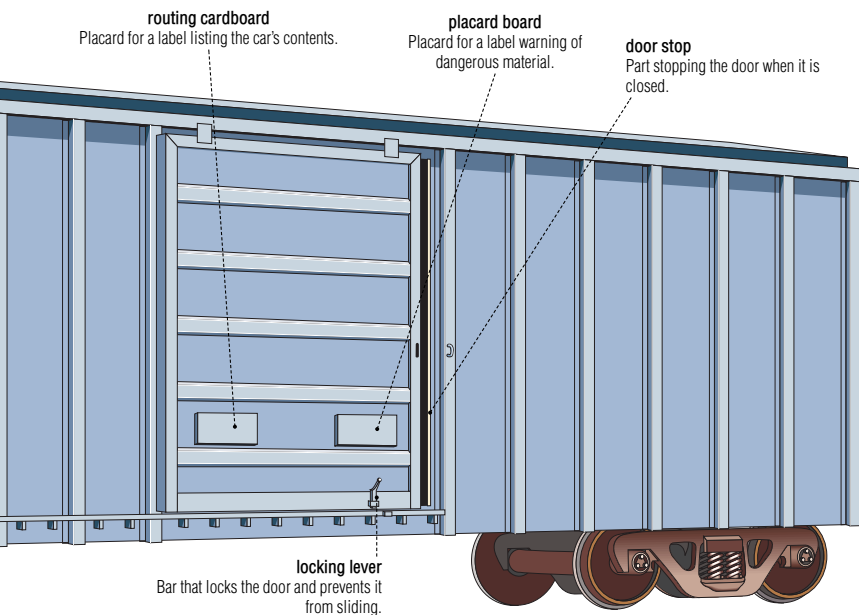
## car

Vehicle pulled by a locomotive for transporting cargo.

**box car**

Car covered with a waterproof casing and having sliding side doors, for transporting cargo that must be protected from the weather and theft.





**automatic coupler**  
Device on each end of a locomotive or car for attaching it to another locomotive or car.

**examples of freight cars**

The shape of the cars varies depending on the type of cargo being transported.

**flat car**

Car with a simple wooden deck for carrying large objects, such as pipes, logs and heavy machinery.

**bulkhead flat car**

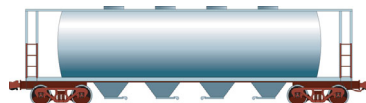
Flat car with sturdy plates at each end for carrying loose cargo (usually logs).

**depressed-center flat car**

Car with two extra trucks and a lowered deck for carrying heavy equipment.

**intermodal car**

Flat car for carrying semitrailers.

**hopper car**

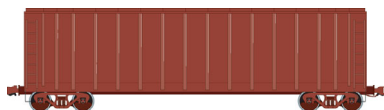
Car for carrying bulk cargo; it has dump doors on the bottom for unloading the cargo.

**gondola car**

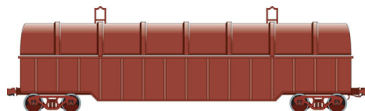
Open-top car for carrying heavy bulk material, such as scrap metal and construction material.

**hopper ore car**

Usually open-top hopper car of limited capacity for carrying minerals.

**wood chip car**

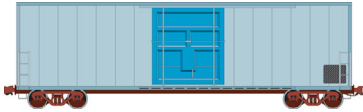
Open-top gondola car with a large compartment for carrying wood chips.

**hard top gondola**

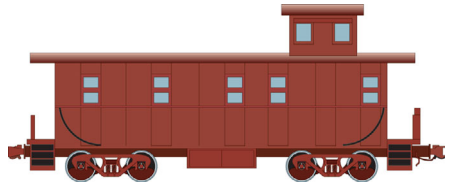
Gondola with of a retractable metal roof for carrying bulk cargo.

**tank car**

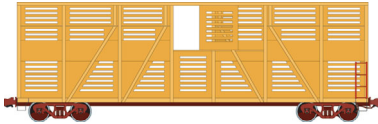
Car with a sealed reservoir for carrying liquids and gases.

**refrigerator car**

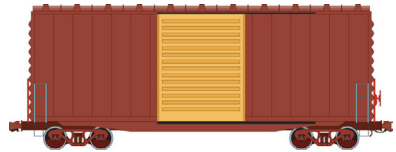
Closed-box insulated car with a refrigeration unit for carrying perishable foodstuffs.

**caboose**

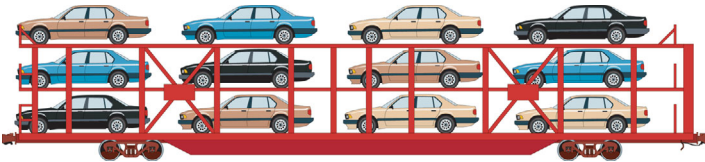
Car that is usually at the end of the train; it houses personnel, provisions and tools.

**livestock car**

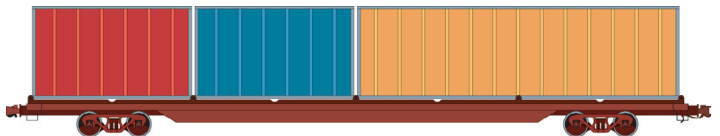
Car with slatted sides for carrying livestock; it sometimes has two decks.

**box car**

Car covered with a waterproof casing and having sliding side doors, for transporting cargo that must be protected from the weather and theft.

**automobile car**

Multilevel car for carrying vehicles, which are strapped down.

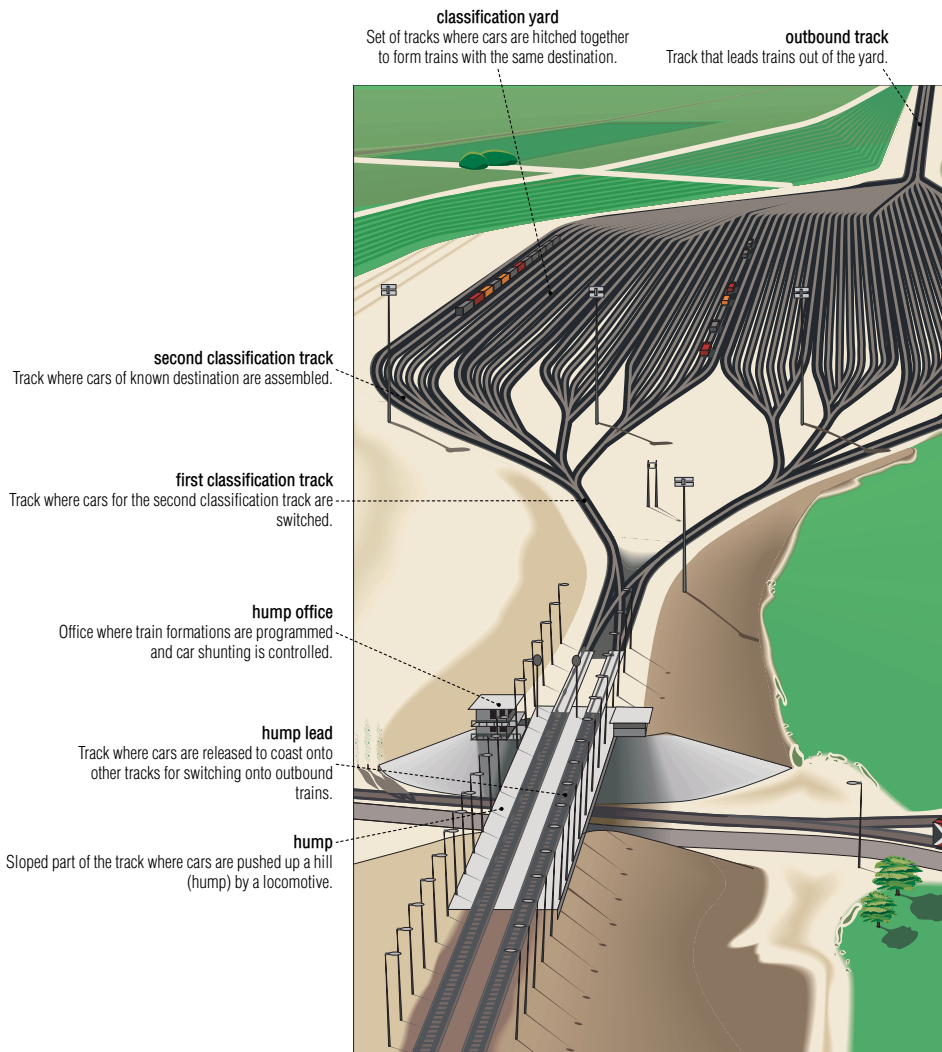
**container car**

Flat car for carrying standard-size shipping boxes.



## yard

Set of tracks where freight trains are reconfigured to contain cargo cars with the same destination and then dispatched.



**car cleaning yard**

Set of tracks where cars are cleansed of any cargo residue before going back into circulation.

**water tower**

Elevated reservoir containing potable water.

**repair shop**

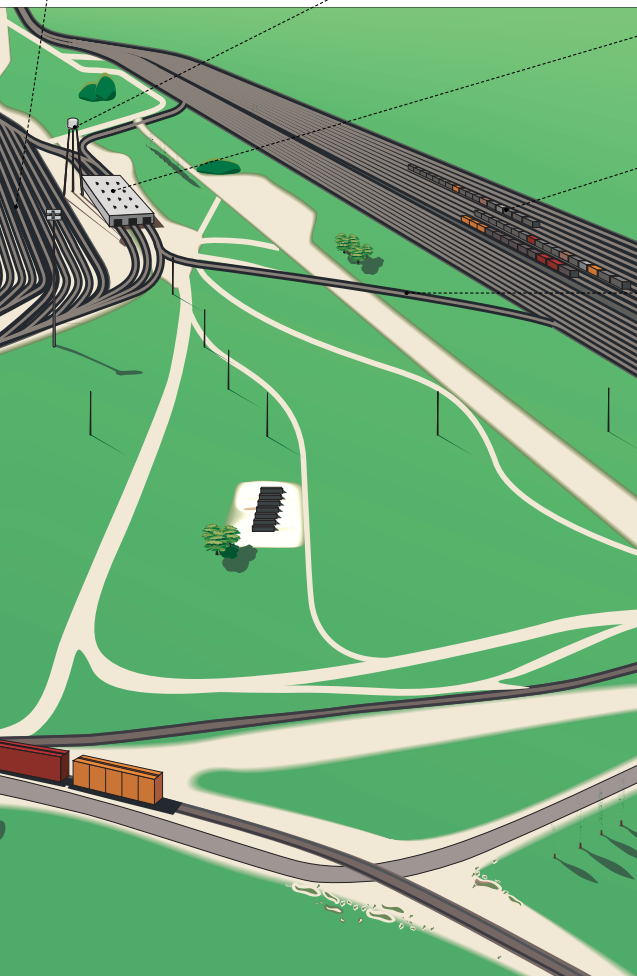
Structure for repairing and maintaining locomotives and cars.

**receiving yard**

Set of tracks where arriving trains park and are unhitched from their locomotives.

**locomotive track**

Track that leads locomotives to the shop for maintenance.



# railroad track

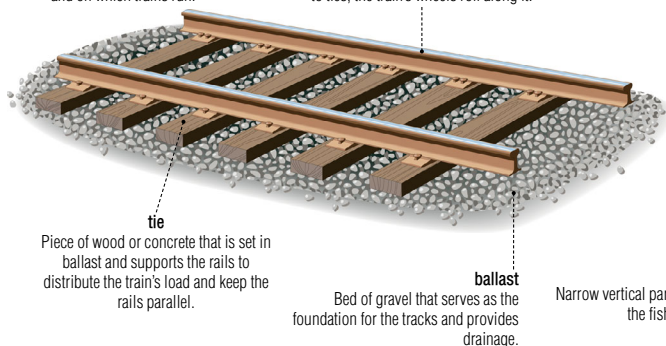
A pair of parallel rails laid end to end and on which trains run.

## railroad track

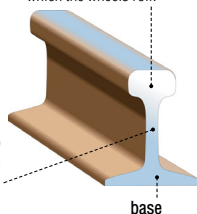
A pair of parallel rails laid end to end and on which trains run.

**rail**  
Steel bar of a set gauge that is attached to ties; the train's wheels roll along it.

## rail section



**head**  
Upper horizontal part of the rail on which the wheels roll.



## remote-controlled switch

Device operated from a distance for opening and closing a pair of movable track rails (switch points) to guide a train from one track to another.

### switch rod

Metal part located between two ties that maintains the distance between two switch points.

### switch point

Movable rail that is machine-tapered at the end and connected to a parallel and similarly machined switch point.

### pull rod

Metal part connected to the power switch machine that opens and closes the switch points.

### power switch machine

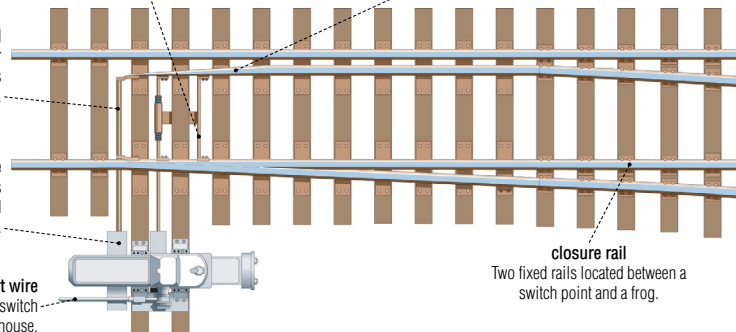
Remote-controlled motor that provides the mechanical force for opening and closing the switch.

### point wire

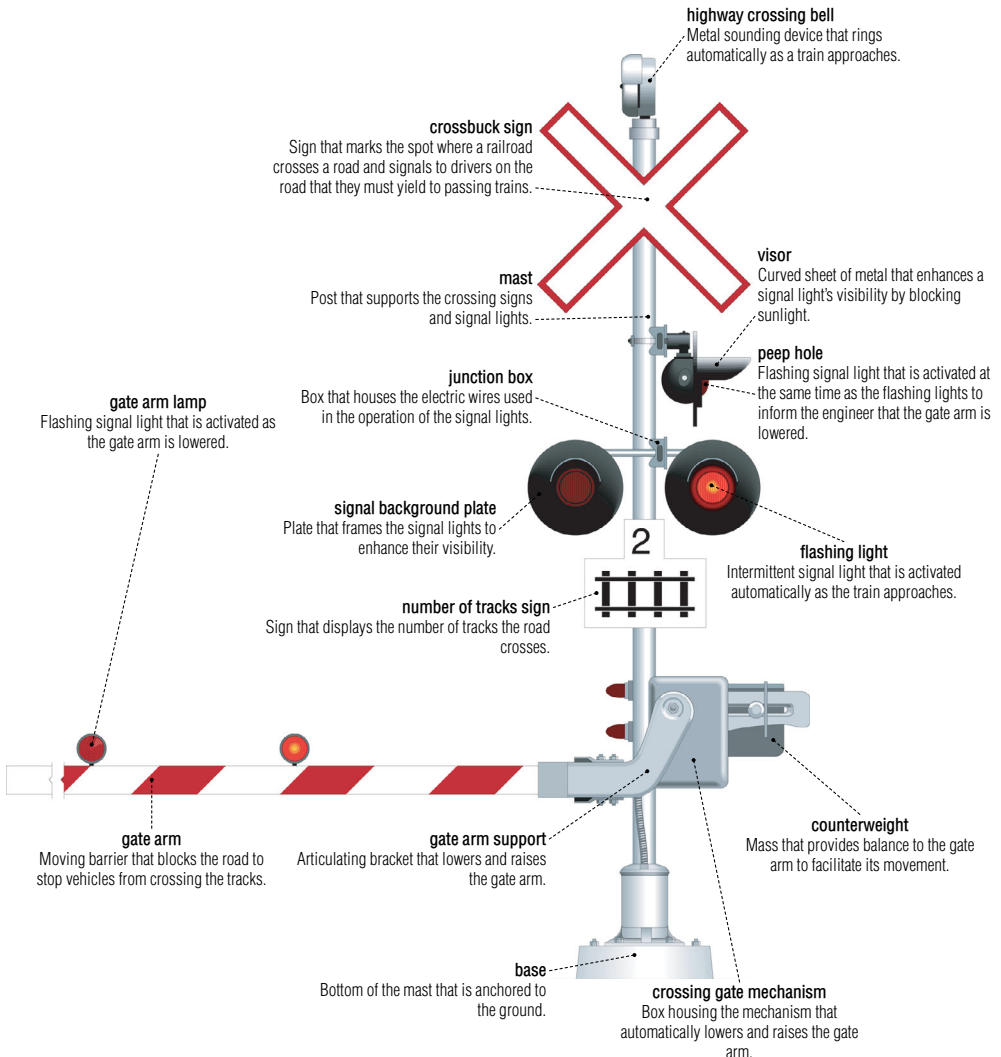
Wire that connects the power switch machine to levers in the switch house.

### closure rail

Two fixed rails located between a switch point and a frog.



Intersection of a railroad and a road, with or without warning lights.

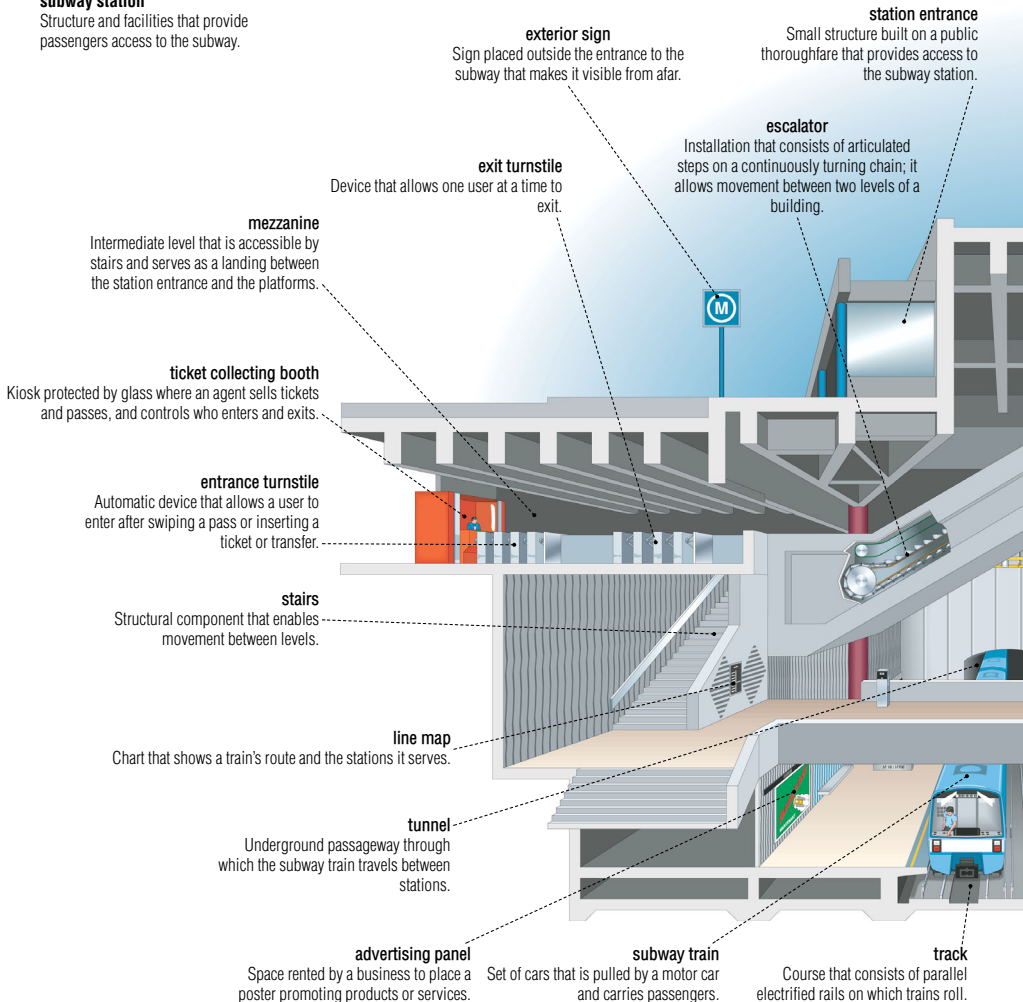


# subway

Electrified urban railroad built mainly underground for transporting passengers at frequent intervals.

## subway station

Structure and facilities that provide passengers access to the subway.



**transfer dispensing machine**

Device that dispenses tickets entitling the user to subsequently board another means of transportation linked with the subway system, such as a bus, streetcar or train.

**kiosk**

Small store in the halls or the entrance of the station that sells newspapers and refreshments.

**footbridge**

Bridge that spans the tracks and provides access to both platforms.

**directional sign**

Sign that indicates the terminus of the train arriving at that platform.

**bench**

Long narrow unupholstered seat with or without a back, seating several people.

**station name**

Sign on the platform wall that shows the name of the station so that passengers in the train can see it.

**subway map**

Map that shows the entire subway system; each subway line is illustrated in a different color.

**platform**

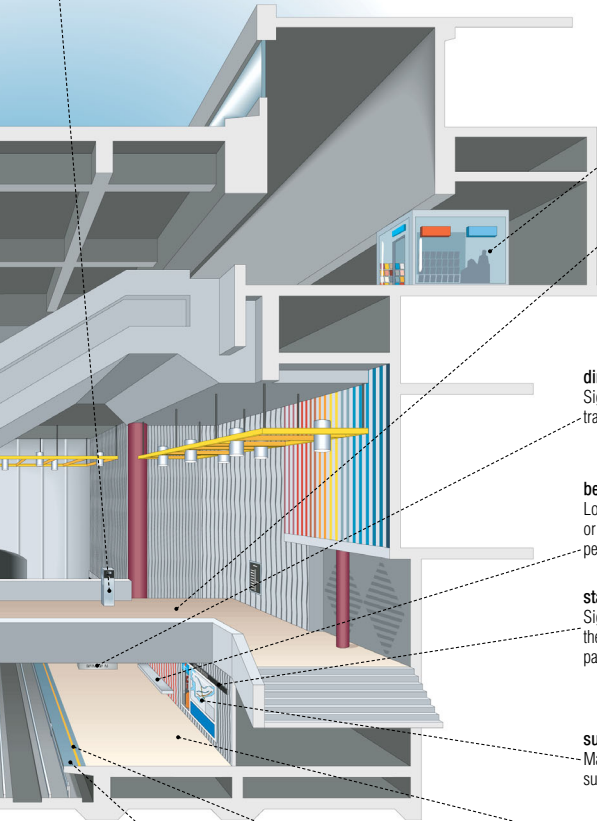
Area adjacent to the tracks where passengers board and exit trains; it is at the same level as the floor of the trains.

**platform edge**

Zone along the edge of the platform, usually demarcated by a safety line.

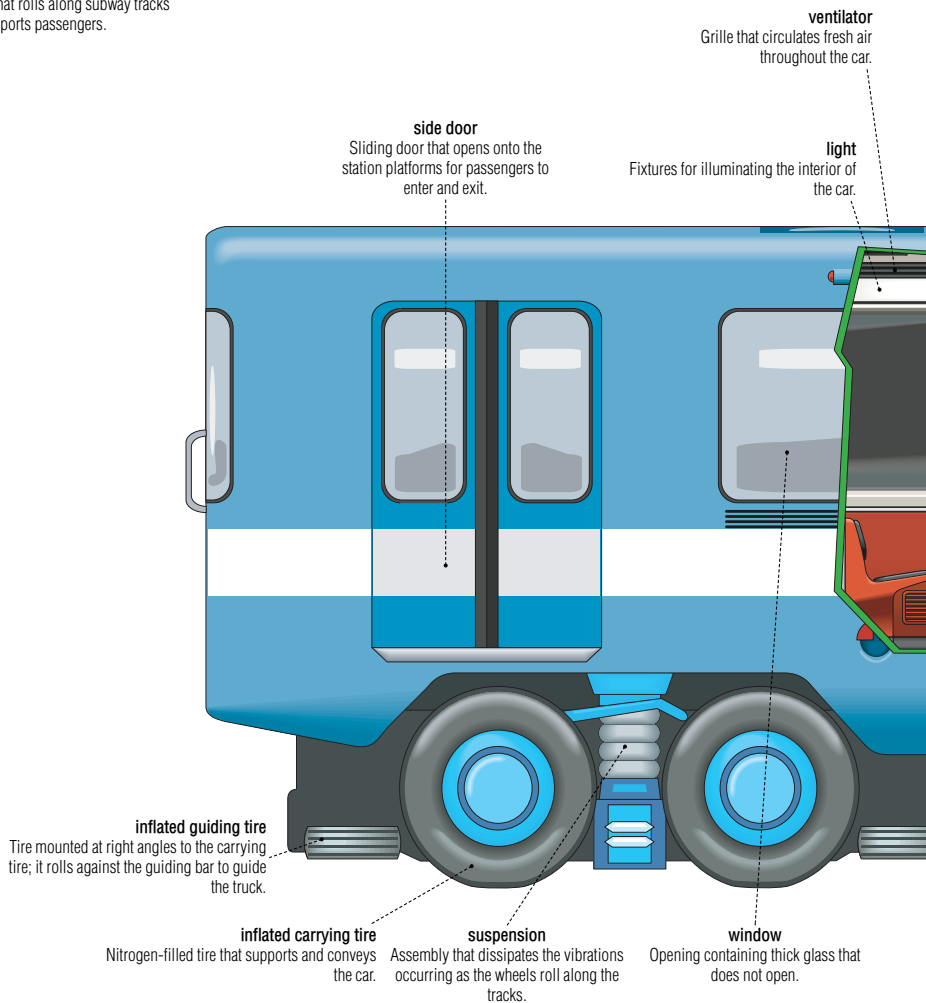
**safety line**

Visible or textured line warning passengers of the margin of safety.



**passenger car**

Vehicle that rolls along subway tracks and transports passengers.



**advertising sign**

Poster on a space rented by a business that promotes products or services.

**communication set**

Loudspeaker phone used for talking to the train driver.

**side handrail**

Handle on the wall next to the door for passengers to hold onto while the train is in motion.

**emergency brake**

Device that stops the train; it is available to users in case of emergency.

**subway map**

Map that shows the entire subway system; each subway line is illustrated in a different color.

**handrail**

Floor-to-ceiling pole in the middle of the aisle for passengers to hold onto while the train is in motion.

**single seat**

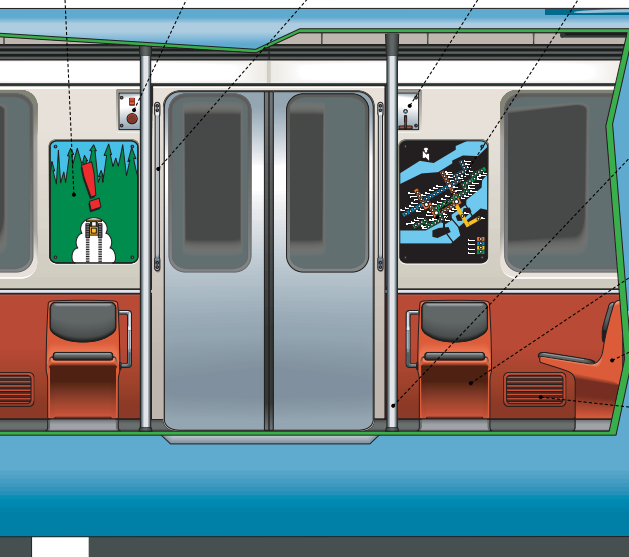
Seat for one passenger.

**double seat**

Bench with space for two passengers.

**heating grille**

Grating through which warm air is forced to heat the car interior.

**subway train**

Set of cars that is pulled by a motor car and carries passengers.

**motor car**

Vehicle with an electric motor and braking system for pulling one or more cars.

**trailer car**

Freewheeling car pulled by a motor car.

**motor car**

Vehicle with an electric motor and braking system for pulling one or more cars.





## subway

**truck and track**

The most up-to-date subway trucks ride on tires, which provide fast acceleration and little noise or vibration.

**guiding and current bar**

Metal bar against which the guiding tire rolls; it also supplies the traction current.

**inflated guiding tire**

Tire mounted at right angles to the carrying tire; it rolls against the guiding bar to guide the truck.

**inflated carrying tire**

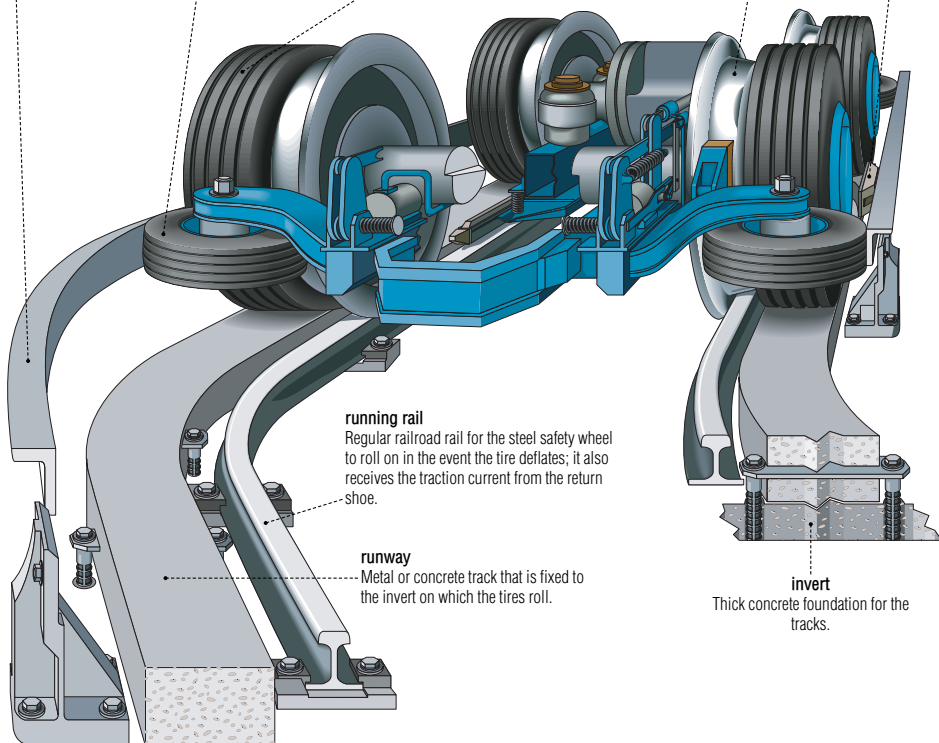
Nitrogen-filled tire that supports and conveys the car.

**sliding block**

Shoe taking the current from the guiding and current bar.

**steel safety wheel**

Auxiliary regular train wheel that comes in contact with the running rail in the event the tire deflates and during switching.

**running rail**

Regular railroad rail for the steel safety wheel to roll on in the event the tire deflates; it also receives the traction current from the return shoe.

**runway**

Metal or concrete track that is fixed to the invert on which the tires roll.

**invert**

Thick concrete foundation for the tracks.

Electrically powered vehicle for transporting people; it rolls on tracks embedded in city streets and on the edge of roadways.

**pantograph**

Articulating mechanism on the roof of the streetcar that collects electricity from an overhead catenary.

**catenary**

One or more overhead wires supplying electricity to the streetcar.

**route sign**

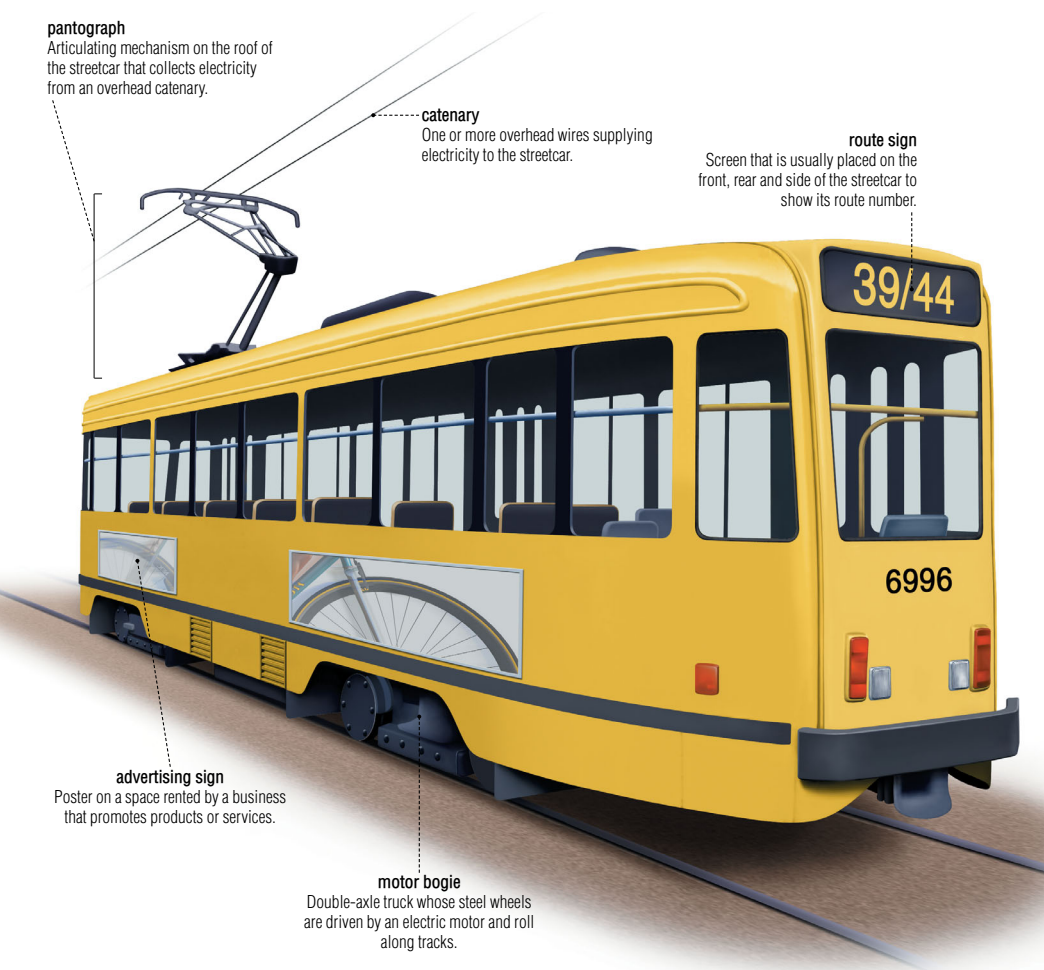
Screen that is usually placed on the front, rear and side of the streetcar to show its route number.

**advertising sign**

Poster on a space rented by a business that promotes products or services.

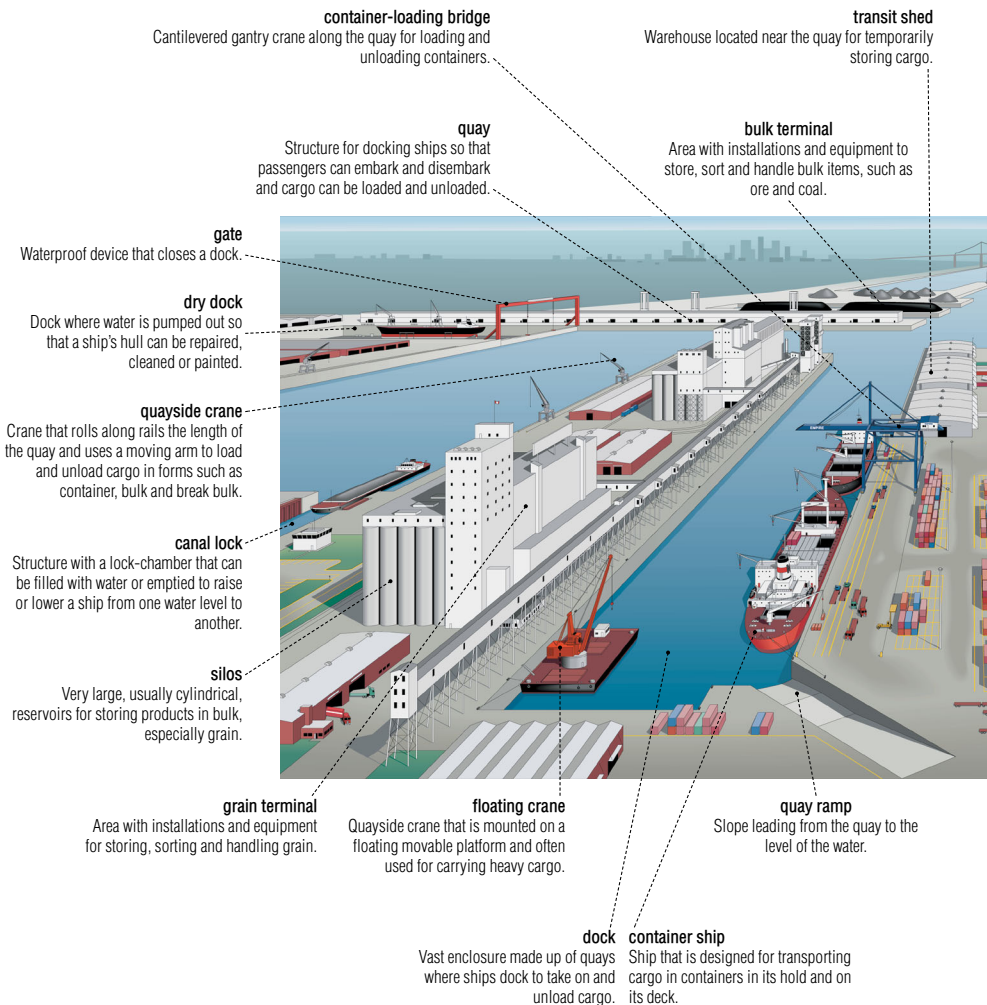
**motor bogie**

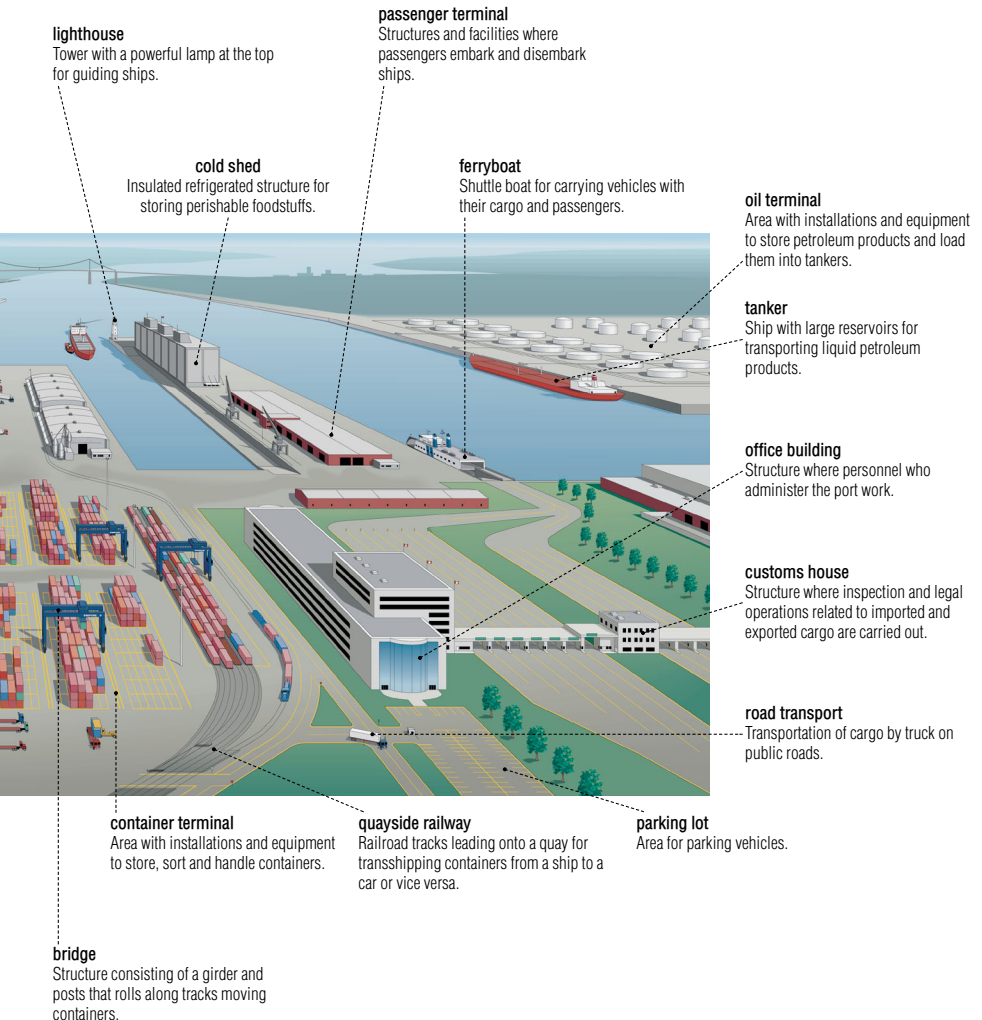
Double-axle truck whose steel wheels are driven by an electric motor and roll along tracks.



## harbor

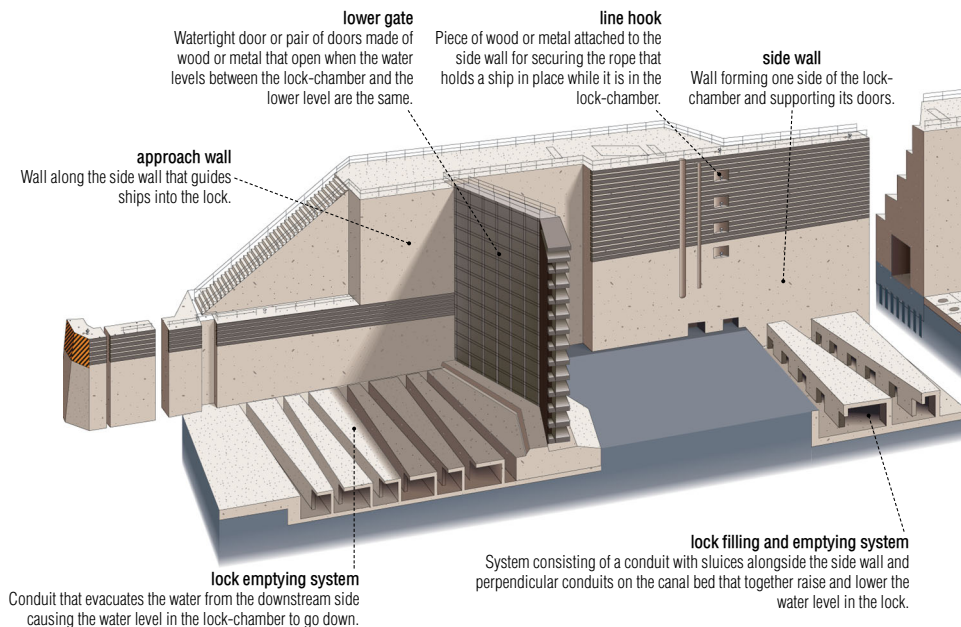
Site for refueling and repairing ships, loading and unloading cargo and embarking and disembarking passengers.



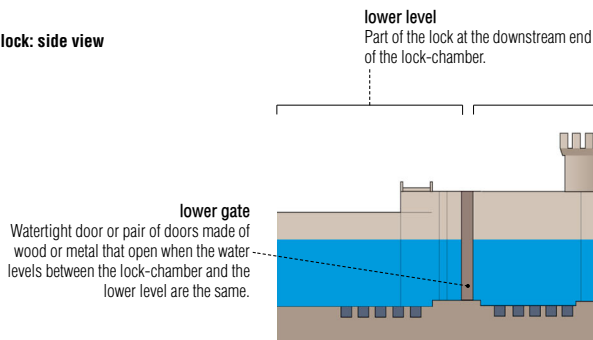


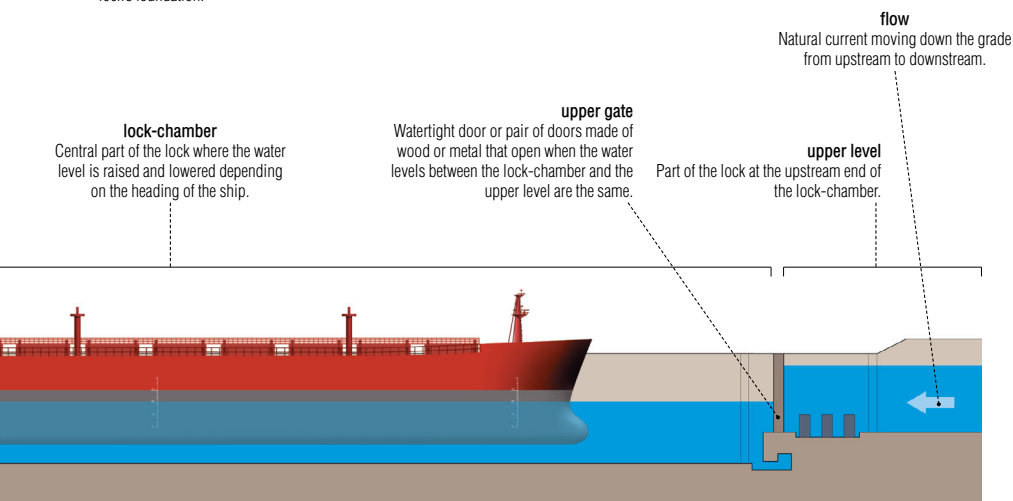
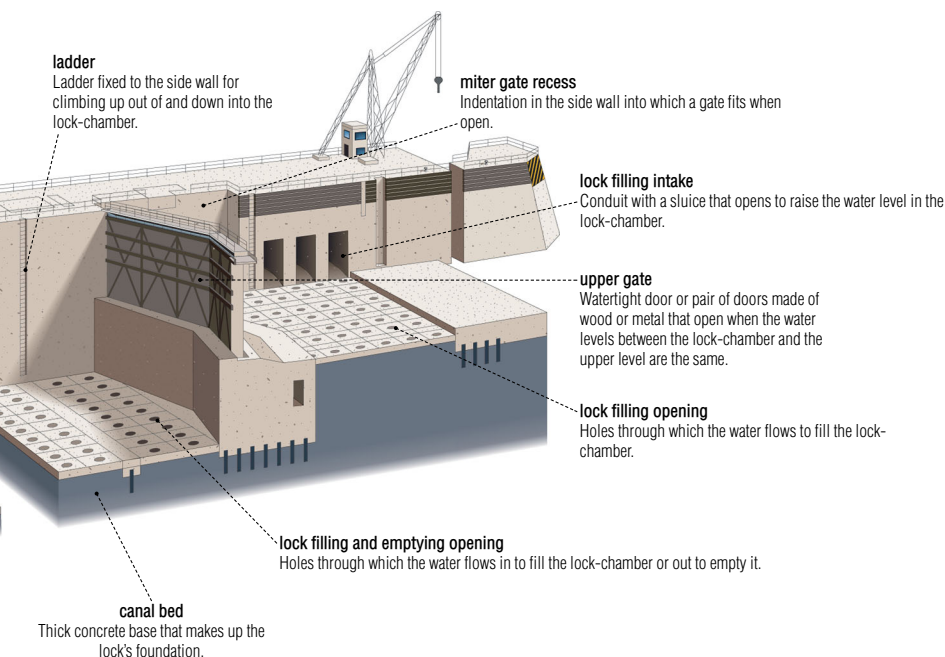
## canal lock

Structure with a lock-chamber that can be filled with water or emptied to raise or lower a ship from one water level to another.



## canal lock: side view



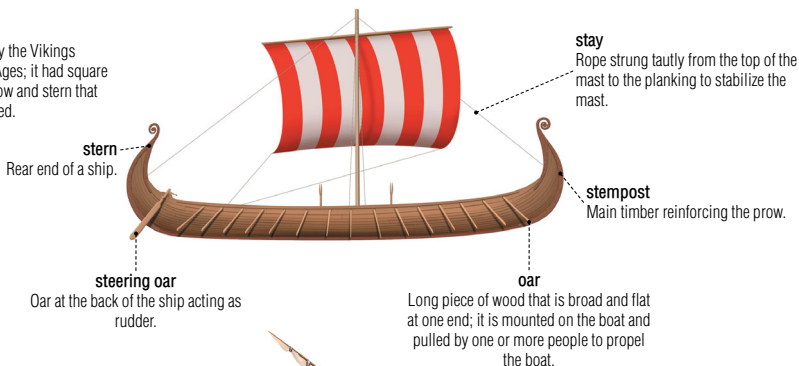


# ancient ships

Over the course of history, navigation has played a key role in discovering new lands and in developing trade between peoples.

## longship

Sailing ship used by the Vikings during the Middle Ages; it had square sails, oars and a prow and stern that were usually sculpted.



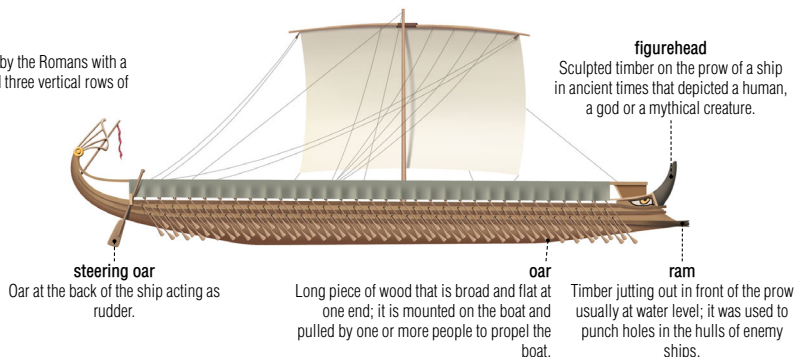
## galley

Warship with a sail and oars that was used in ancient times; it disappeared in the 18th century.



## trireme

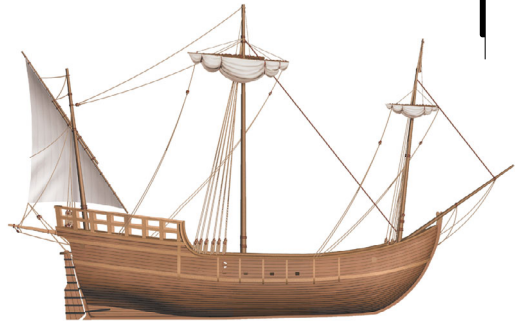
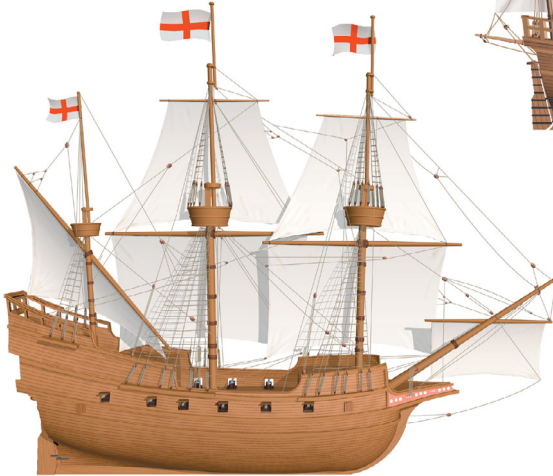
Warship used by the Romans with a ram, a sail and three vertical rows of oars.





**galleon**

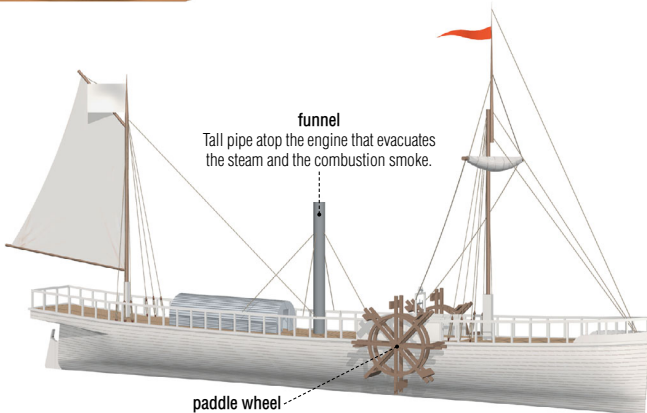
Large warship with sails that was used by the Spanish in the 17th and 18th centuries for trading with the colonies.

**caravel**

Fast ship with three or four masts; it was used especially in the 15th and 16th centuries for exploration.

**side-wheeler**

Ship used in the 19th century that was propelled by steam, which turned two paddle wheels.

**funnel**

Tall pipe atop the engine that evacuates the steam and the combustion smoke.

**paddle wheel**

Wheel with blades that propels the boat; it is driven by a steam engine.

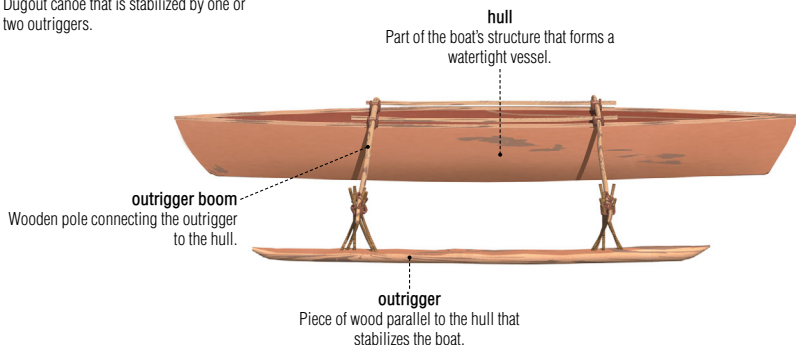


## traditional ships

Boats characteristic of various parts of the world for a number of generations; they are used as a means of transportation, for fishing, commerce and exploration.

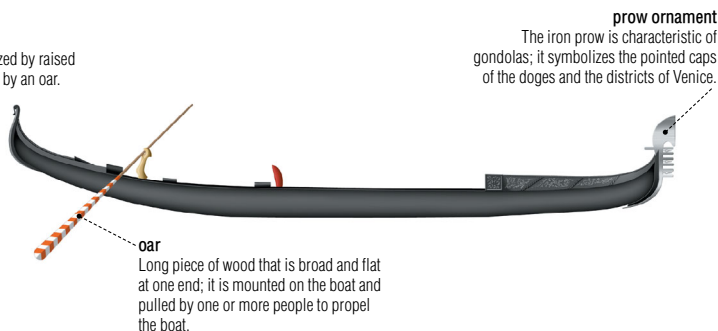
### outrigger canoe

Dugout canoe that is stabilized by one or two outriggers.



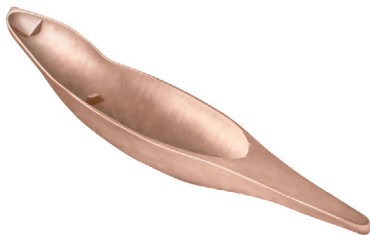
### gondola

Venetian boat characterized by raised curved ends and steered by an oar.



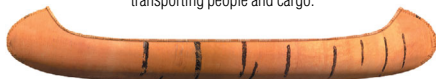
### dugout canoe

Light boat used in Africa and Oceania that is made from one piece of wood and is propelled by a paddle or a sail.



### canoe

Light boat used by Native Americans; it is propelled by a paddle and is used for transporting people and cargo.

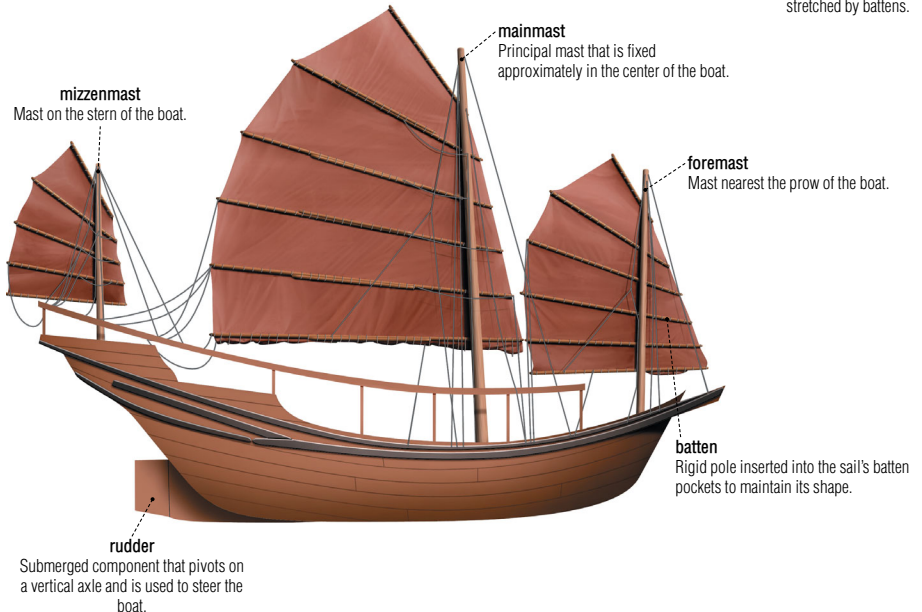


**felucca**

A Mediterranean boat of ancient times that was propelled by a sail or an oar; it is still found today on the Nile.

**junk**

Boat used in the Far East for fishing and transporting cargo; its sails are made of matting or canvas and are stretched by battens.



# four-masted bark

Sailboat with four masts and square sails except for the jiggermast, which carries a gaff sail.

## masting and rigging

Masting: masts, yards, ropes and other movable sailing equipment that support and manipulate the rigging.

### mizzenmast

One of the principal masts of the ship; it is located aft of the mainmast between the ship's center of gravity and its rudder.

### mainmast

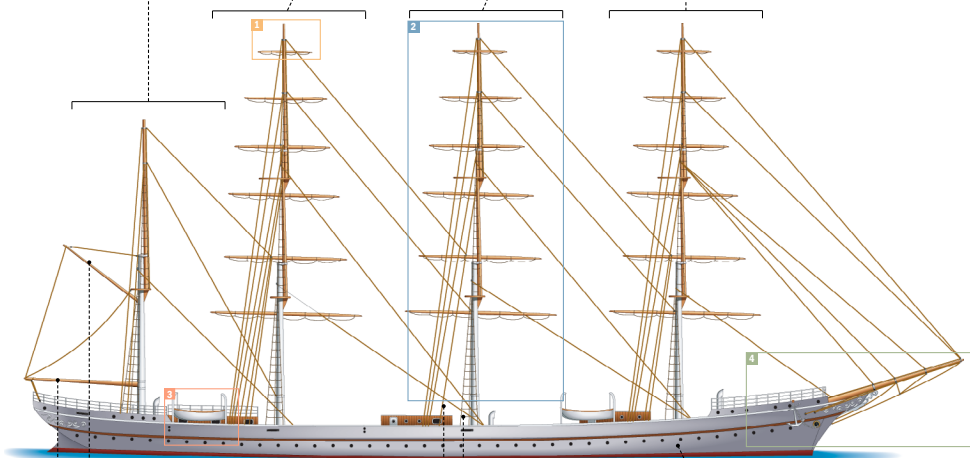
One of the principal parts of the ship; it is located closest to the center of gravity.

### foremast

Mast nearest the prow of the boat.

### jiggermast

Mast located aft on the four-masted bark.



### gaff

Diagonal yard aft of a mast and supporting the top part of a gaff sail.

### shroud

Heavy taut rope between a mast and the side of the ship; it secures and supports the mast on the sides.

### side

Longitudinal surface of the ship.

### gaff sail boom

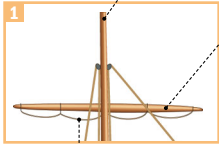
Horizontal yard articulating on a mast; it keeps the bottom edge of a sail taut.

### backstay

Long taut rope between the mast and the deck; it secures and supports the mast athwartships and aft.

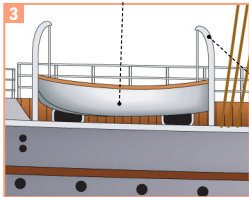
**pole**  
Tapered top end of a mast.

**yard**  
Long pole that is supported by the mast and holds up the edge of a sail.



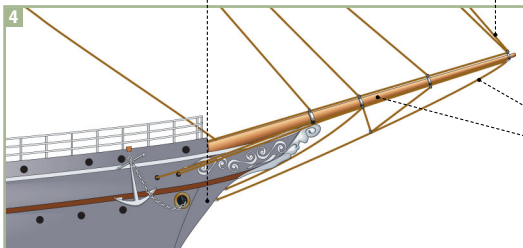
**footrope**  
Rope hanging along the entire length of a yard that is used by sailors to trim the sails.

**lifeboat**  
Boat for transporting passengers and crew in the event of shipwreck.



**davit**  
Skid hanging over the edge of the ship that supports a boat and is used to lower and raise it.

**stem**  
Main timber reinforcing the prow.

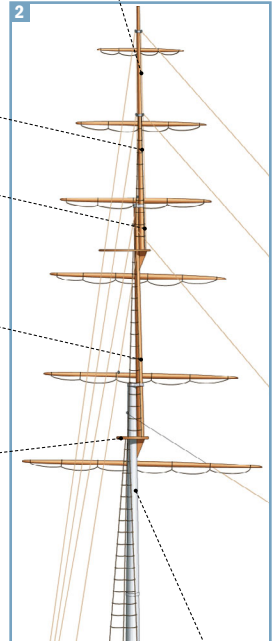


**stay**  
Taut rope between a mast and another point on the masting; it secures and supports the mast fore of it.

**bobstay**  
Rope counterbalancing the tension caused by the stays and the staysails on the bowsprit.

**bowsprit**  
Mast extending before the stem; additional jibs can be attached to it.

**fore-royal mast**  
Mast above the fore-topgallant mast that carries a royal sail.



**fore-topgallant mast**  
Mast above the fore-topmast that carries a topgallant sail.

**masthead**  
Topmost section of a mast that is sometimes doubled with the lower section of the mast supporting it; the stays and shrouds are attached to it.

**fore-topmast**  
Mast that is immediately above a lower mast and carries a topsail.

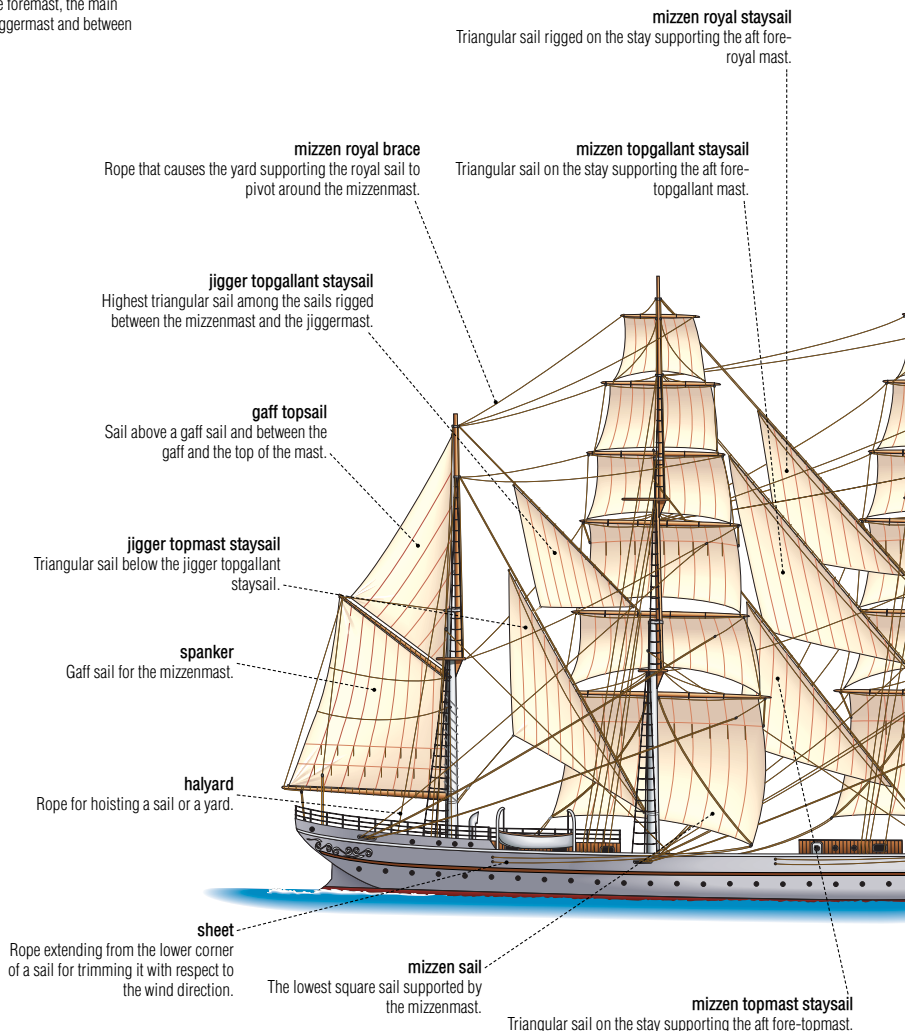
**top**  
Platform at the top of the lower mast from which the upper rigging can be manipulated.

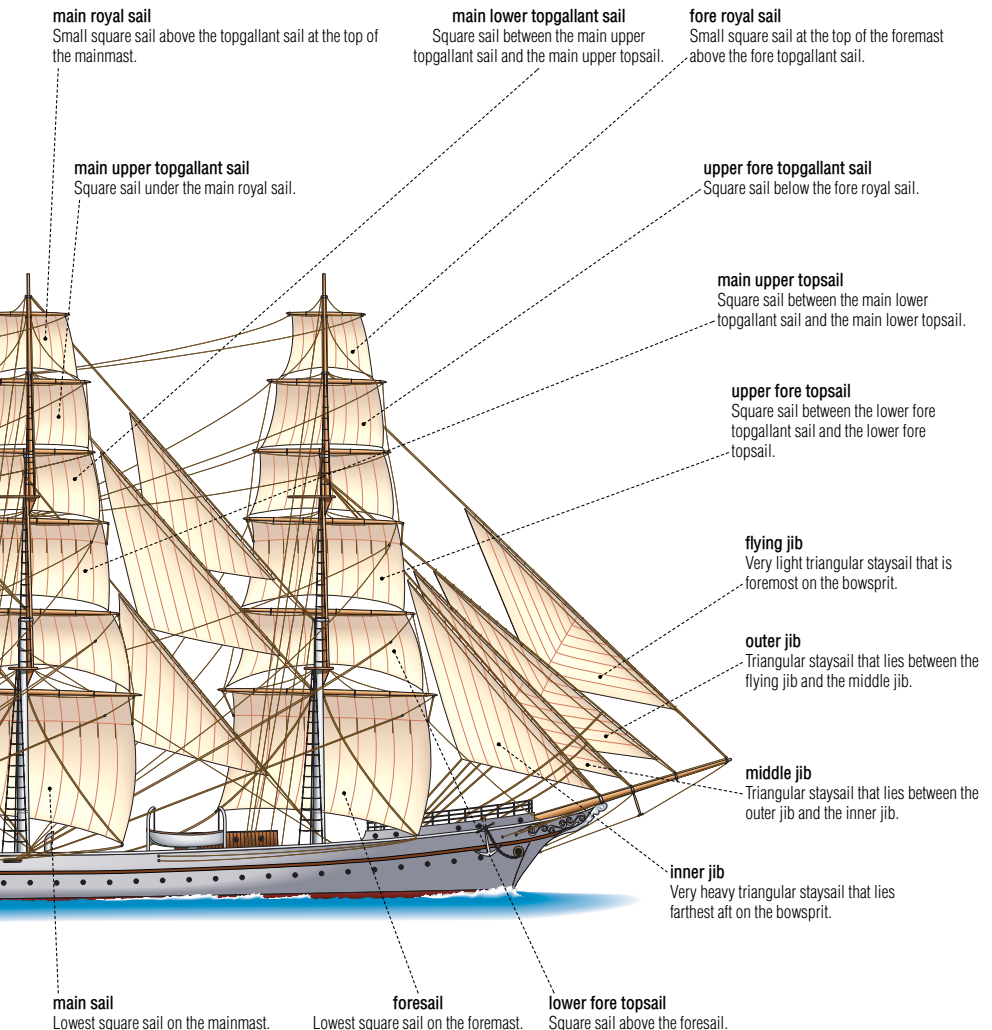
**lower mast**  
Bottom section of a mast that is solid and thick so it can support the upper sections.

## four-masted bark

**sails**

A sailboat's sails that are rigged on the bowsprit, the foremast, the main masts, the jiggermast and between these masts.



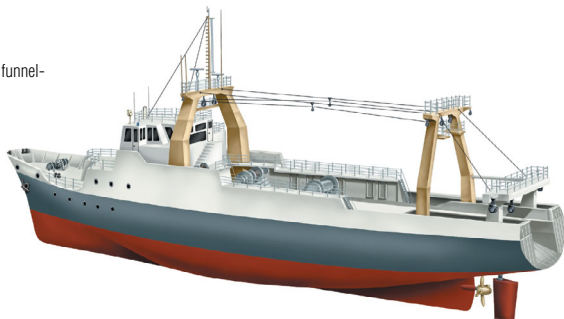


## examples of boats and ships

Boats and ships: floating structures for underwater exploration and transporting passengers and cargo across water.

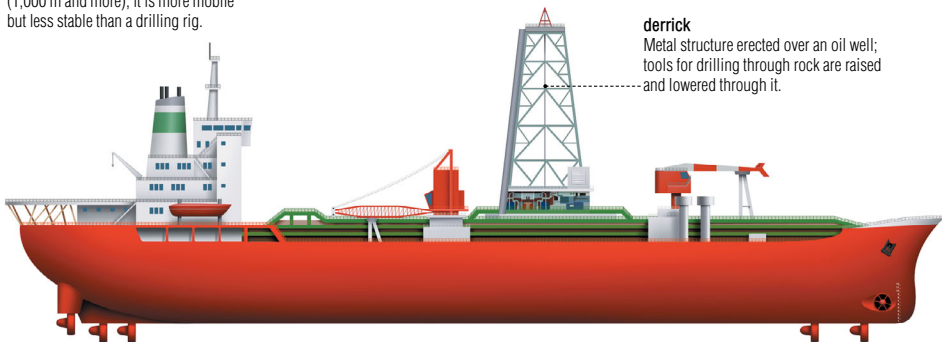
### trawler

Fishing boat that tows a large funnel-shaped net (trawl).



### drill ship

Ship for drilling for oil in deep water (1,000 m and more); it is more mobile but less stable than a drilling rig.

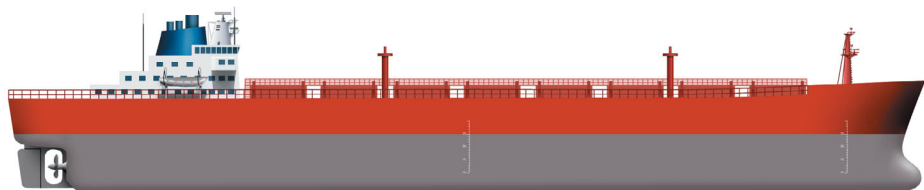


### derrick

Metal structure erected over an oil well; tools for drilling through rock are raised and lowered through it.

### bulk carrier

Ship for transporting raw dry materials, such as grain, coal and ore.



**tug**

Boat propelled by powerful engines that is used to tow boats and other floating craft to help them maneuver or to rescue them.

**wheelhouse**

Cabin that houses the pilot and the navigation instruments.

**rudder blade**

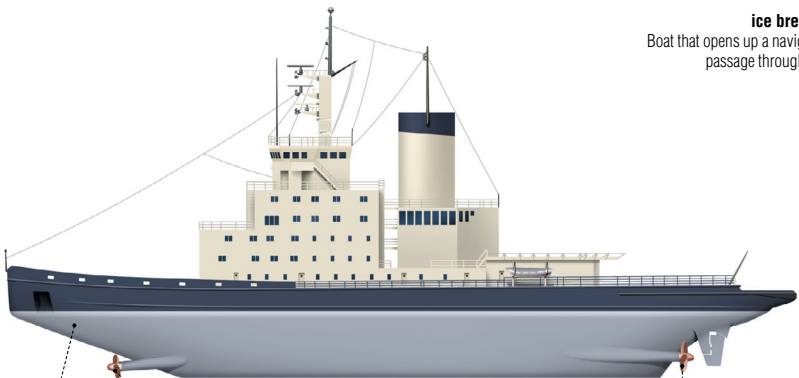
Part of the rudder that receives the thrust from the propeller in order to steer the boat.

**propeller**

Device with blades integrated onto a shaft that is driven by the engine to provide thrust and thus impel the ship.

**ice breaker**

Boat that opens up a navigable passage through ice.

**stem**

Reinforced part of the boat's prow that crushes the ice with its weight and then pushes it aside to open a channel.

**stem propeller**

Screw that pulls up water from under the ice sheet to weaken its support thus making it easier to break and move.

**rear propeller**

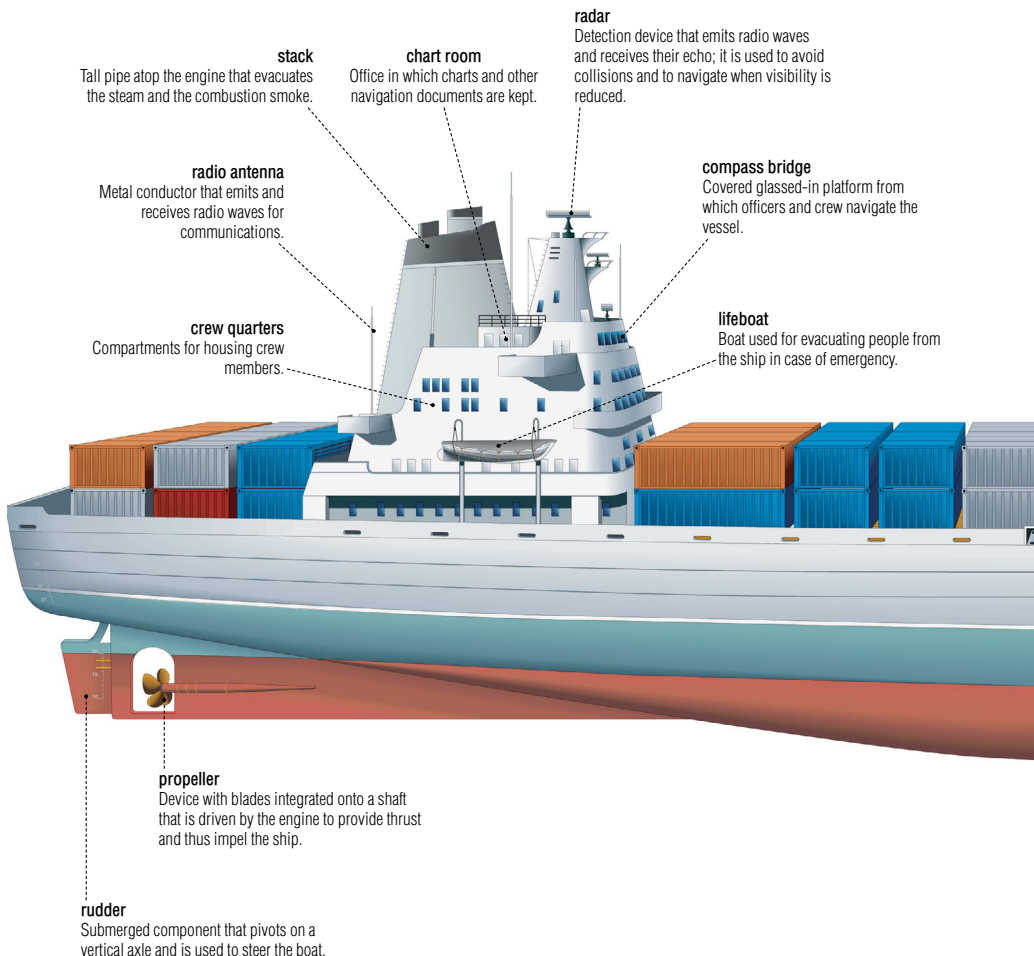
Screw driven by a powerful engine to propel the ice breaker.

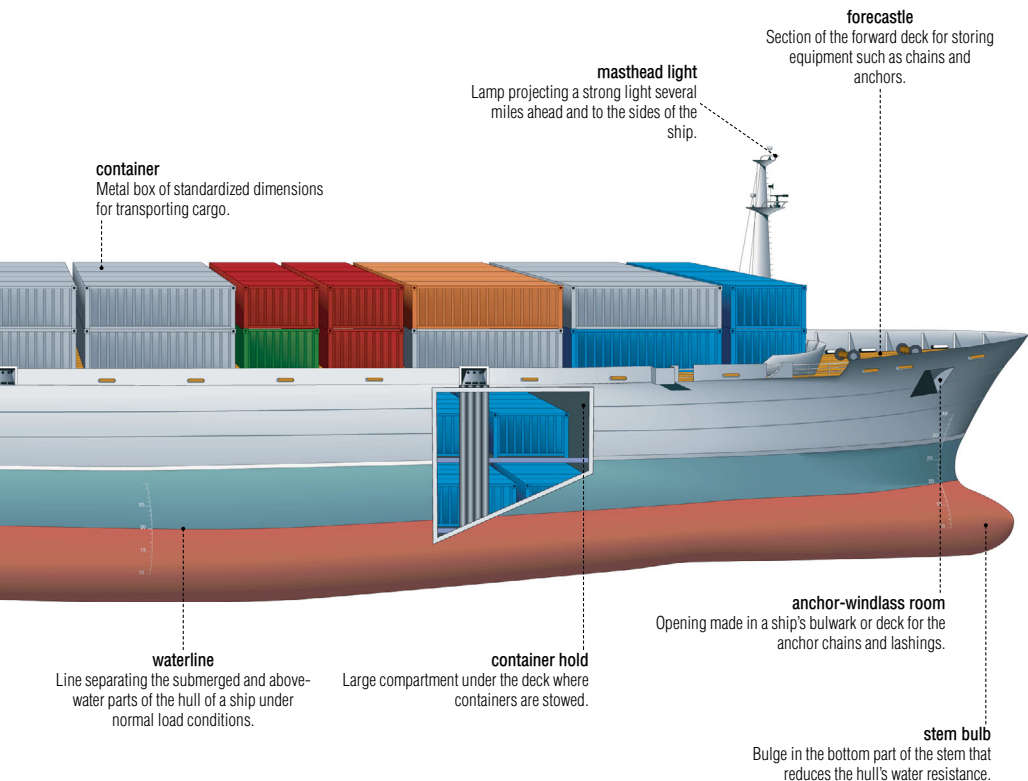


## examples of boats and ships

**container ship**

Ship that is designed for transporting cargo in containers in its hold and on its deck.





## examples of boats and ships

**hovercraft**

Propeller vehicle that moves above water (or land) by gliding on a cushion of air it creates by blowing downward.

**rudder**

Pivoting part behind the propeller blast for steering the hovercraft.

**propeller duct**

Metal part that surrounds the propeller and increases its power by concentrating its air intake.

**dynamics propeller**

Device that is made up of blades integrated with a shaft; it pushes air behind the hovercraft thus causing a forward movement.

**control deck**

Compartment from which the pilots operate the hovercraft.

**navigation light**

Lamp that is visible from afar to signal the hovercraft's presence.

**passenger cabin**

Compartment where the passengers sit during the trip.

**blade lift fan**

Device blowing air downward under the hovercraft to keep it levitated.

**skirt finger**

Flexible and pliable extension to the skirt that adapts to the surface of the water.

**baggage racks**

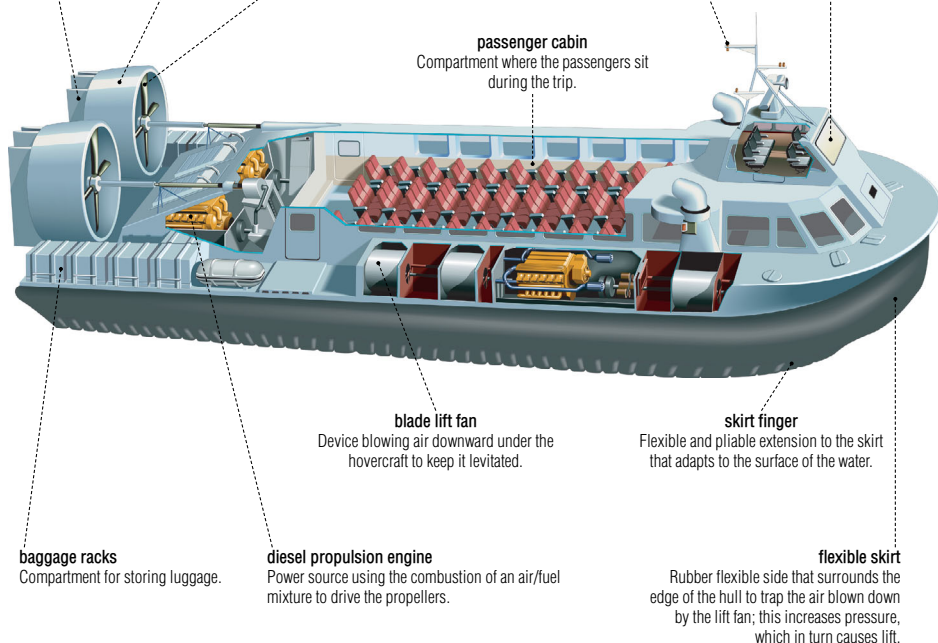
Compartment for storing luggage.

**diesel propulsion engine**

Power source using the combustion of an air/fuel mixture to drive the propellers.

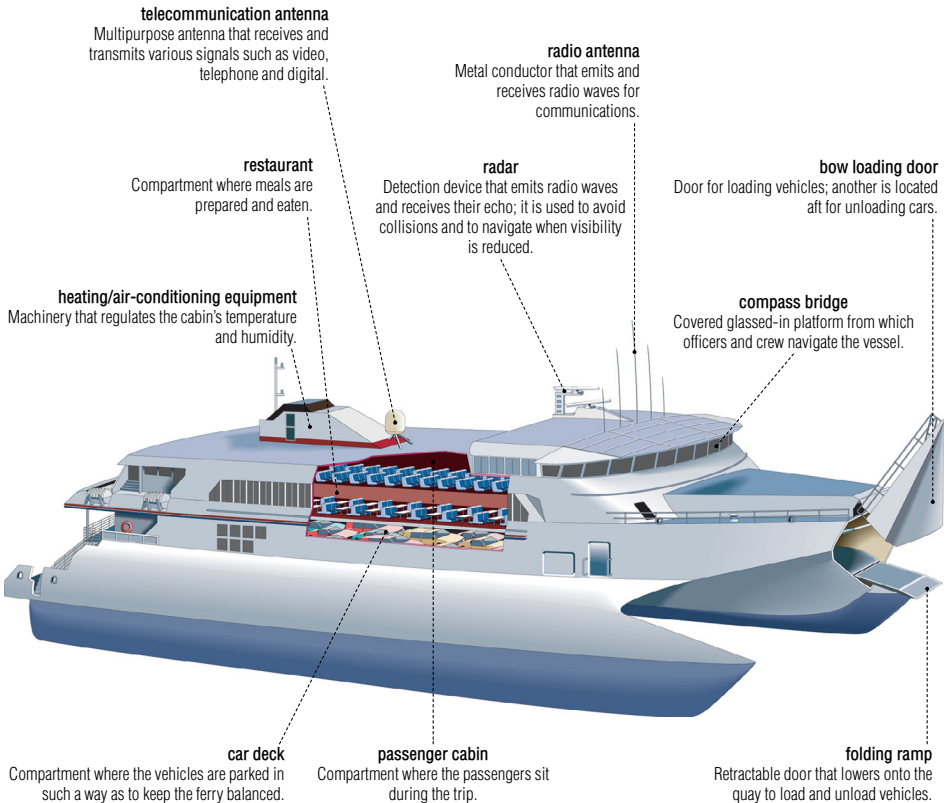
**flexible skirt**

Rubber flexible side that surrounds the edge of the hull to trap the air blown down by the lift fan; this increases pressure, which in turn causes lift.



**ferry boat**

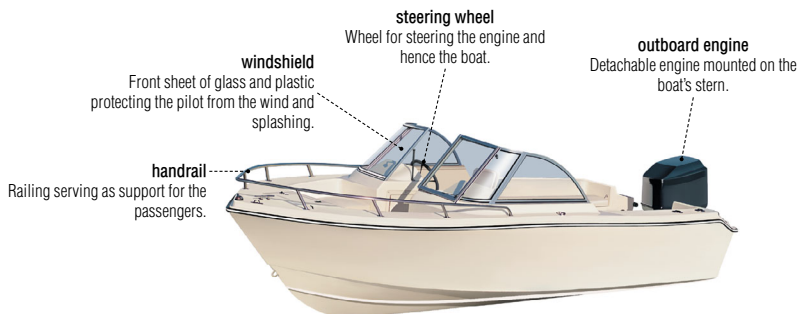
Shuttle boat for carrying vehicles with their cargo and passengers.



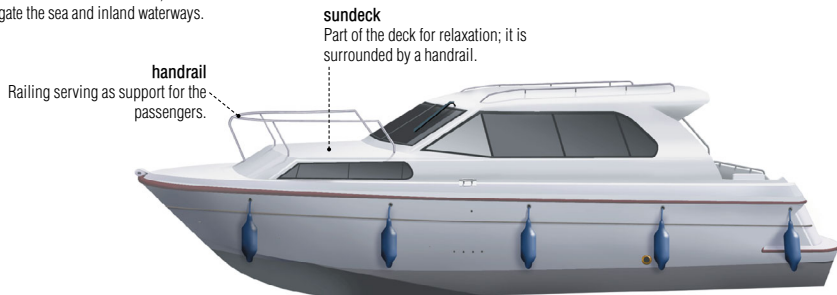
## examples of boats and ships

**runabout**

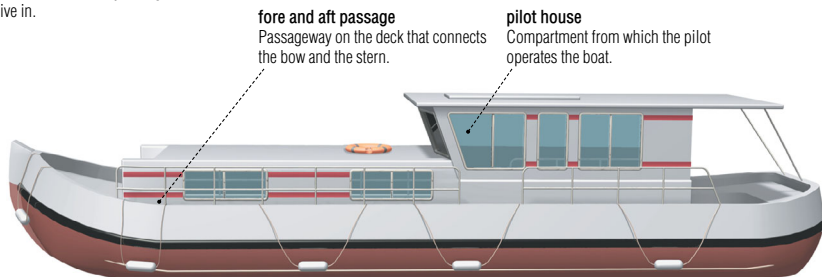
Pleasure boat with an outboard engine for cruising and waterskiing on inland waterways.

**motor yacht**

Pleasure boat of various sizes and speeds with a cabin fit to live in; it can navigate the sea and inland waterways.

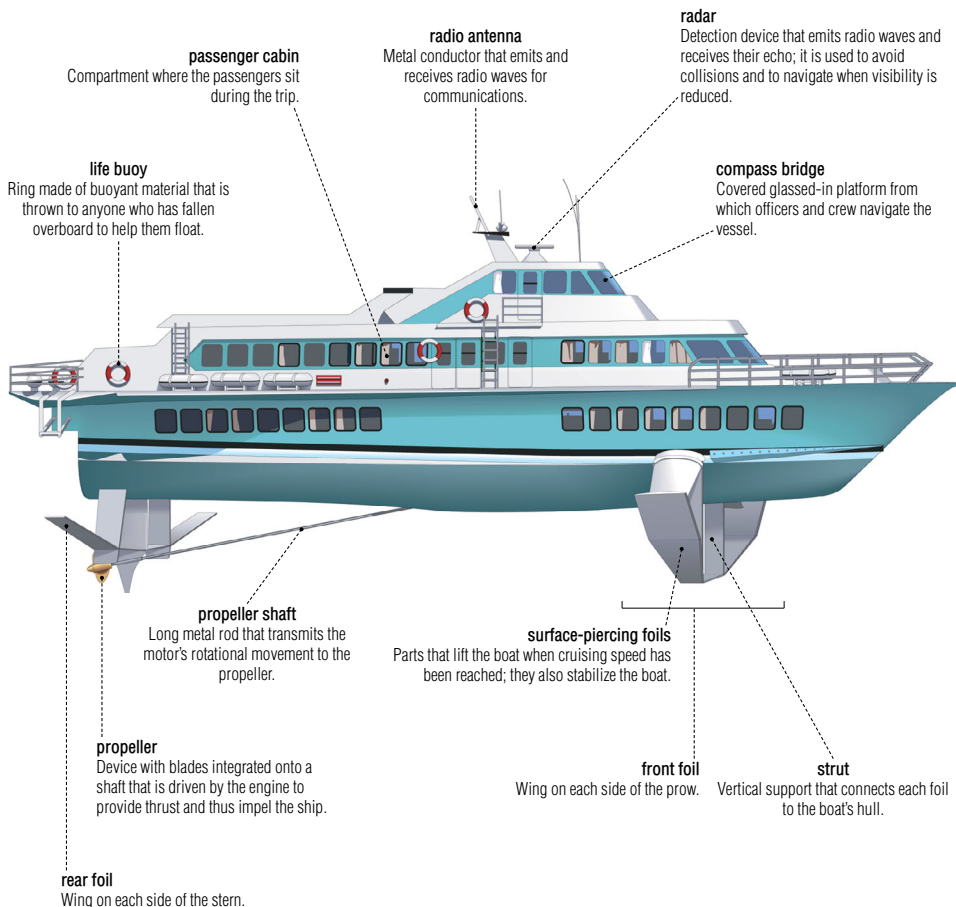
**houseboat**

Motorized pleasure boat for navigating inland waterways; it is characterized by a long deck and a cabin fit to live in.



**hydrofoil boat**

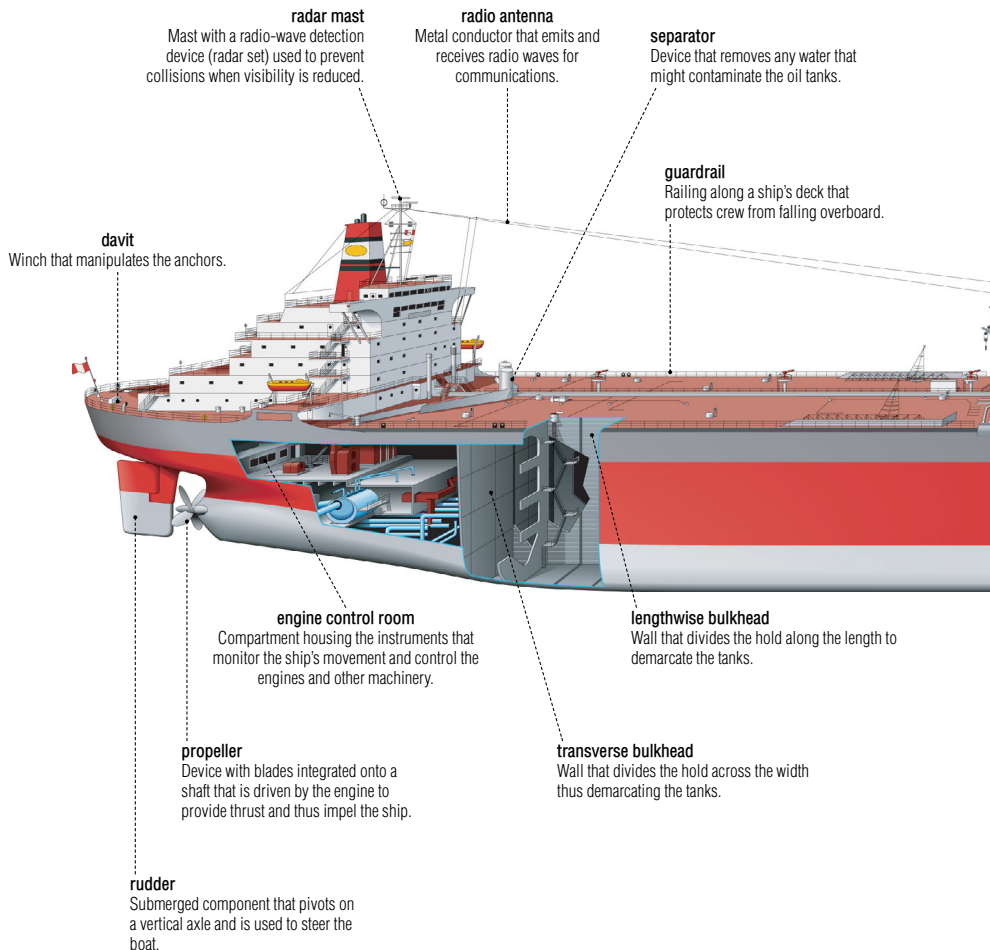
Fast boat with foils, which lift and support the hull above water when cruising speed is reached.

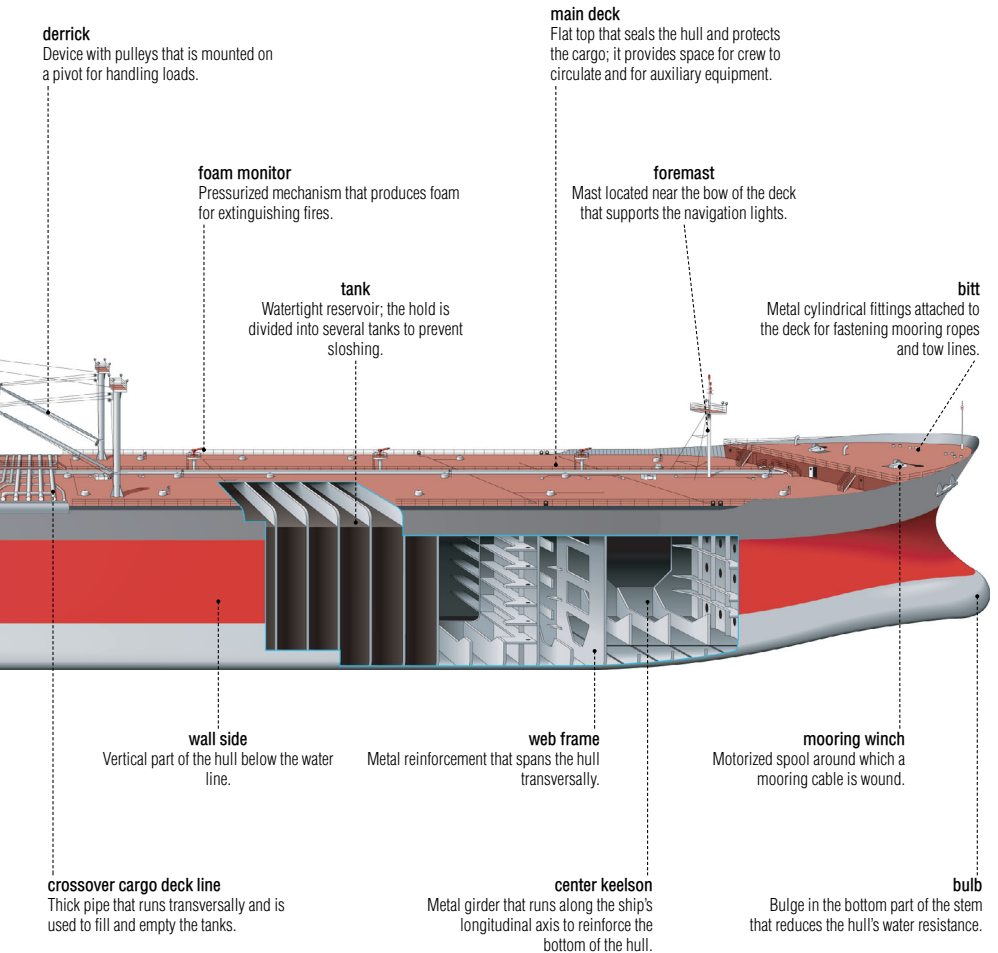


## examples of boats and ships

**tanker**

Ship with large reservoirs for transporting liquid petroleum products.







## examples of boats and ships

**passenger liner**

Large cruise ship, fitted like a luxury hotel and with diverse recreation facilities for passengers.

**hall**

Room fitted with armchairs for passengers to meet.

**funnel**

Long vertical pipe above the machinery evacuating exhaust gases from the engines, with filters for absorbing carbon particles.

**promenade deck**

Open deck for strolling that is sometimes glassed in.

**lounge**

Area with a counter and tables where alcoholic drinks are sold.

**stern**

Rear end of a ship.

**playing area**

Fenced-in area for playing ball sports.

**propeller**

Device with blades integrated onto a shaft that is driven by the engine to provide thrust and thus impel the ship.

**rudder**

Submerged component that pivots on a vertical axle and is used to steer the boat.

**engine room**

Room housing the engines, turbines and related machinery that propel the ship.

**stabilizer fin**

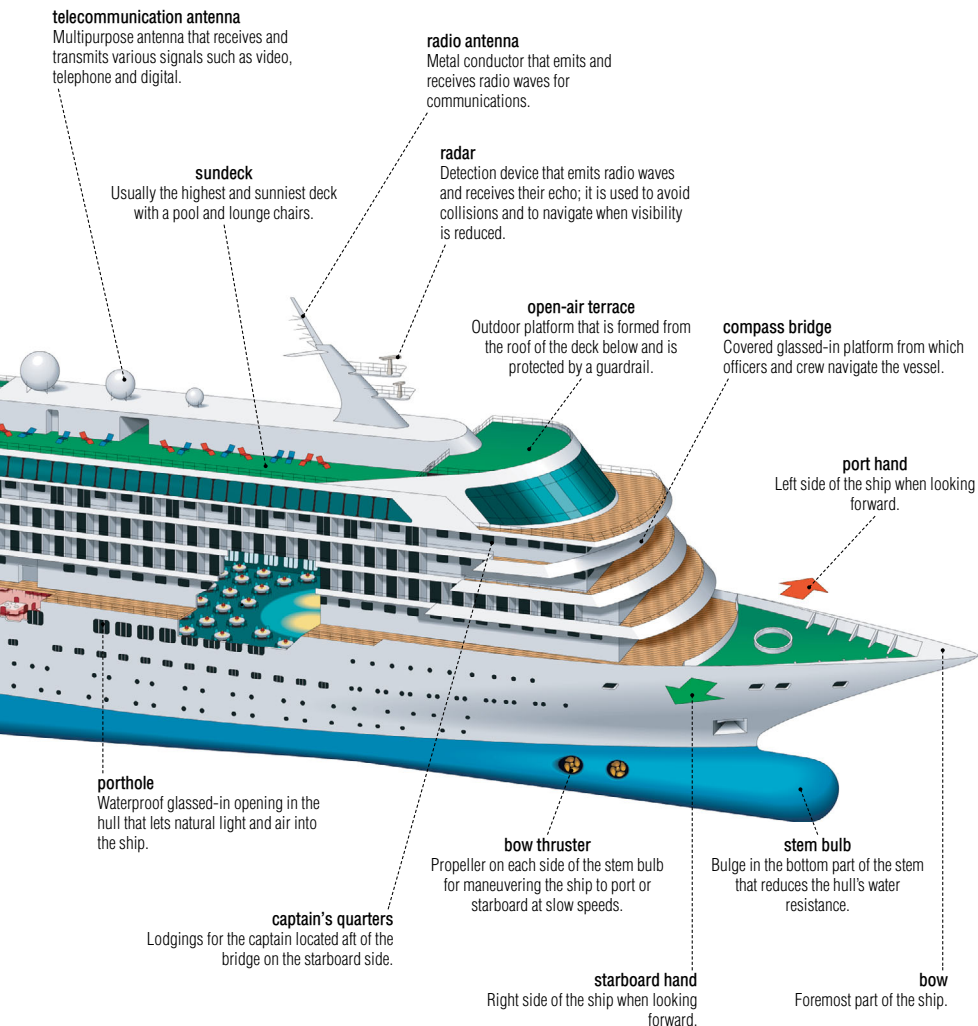
Small pivoting winglike flaps on each side of the hull to reduce the rolling motion.

**cabin**

Room that accommodates one or several passengers.

**dining room**

Hall for eating meals.

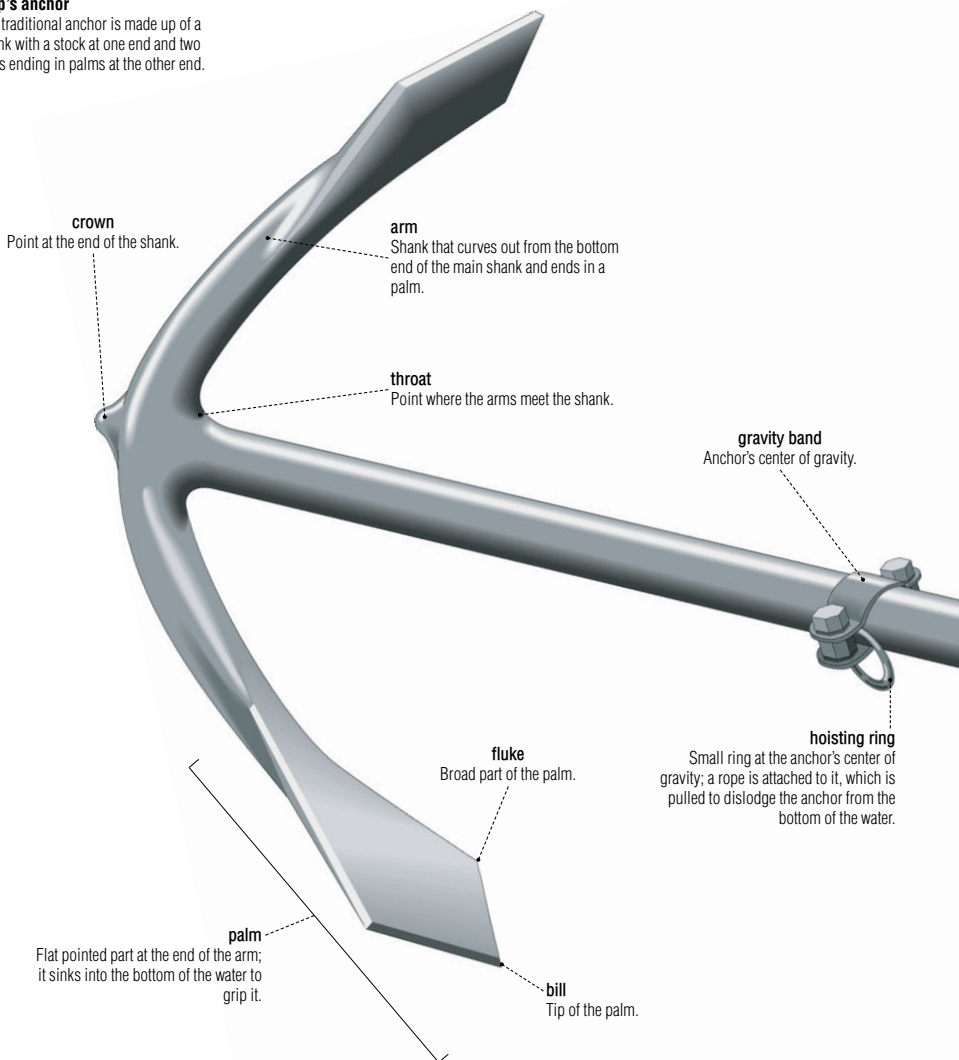


# anchor

Usually steel part that is attached to a chain or cable; it hooks onto the bottom of a body of water to keep the boat from moving.

## ship's anchor

The traditional anchor is made up of a shank with a stock at one end and two arms ending in palms at the other end.

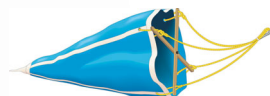


**plow anchor**

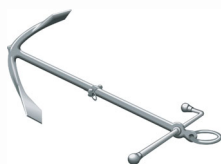
Anchor with a plow-shaped arm that pivots on the shank and hooks onto most bottoms.

**stockless anchor**

Relatively light anchor with a pair of pivoting palms that fold along the shank.

**sea anchor**

Solid cone-shaped canvas sack that is dragged behind a boat to counter heaving and strong winds.

**stocked anchor**

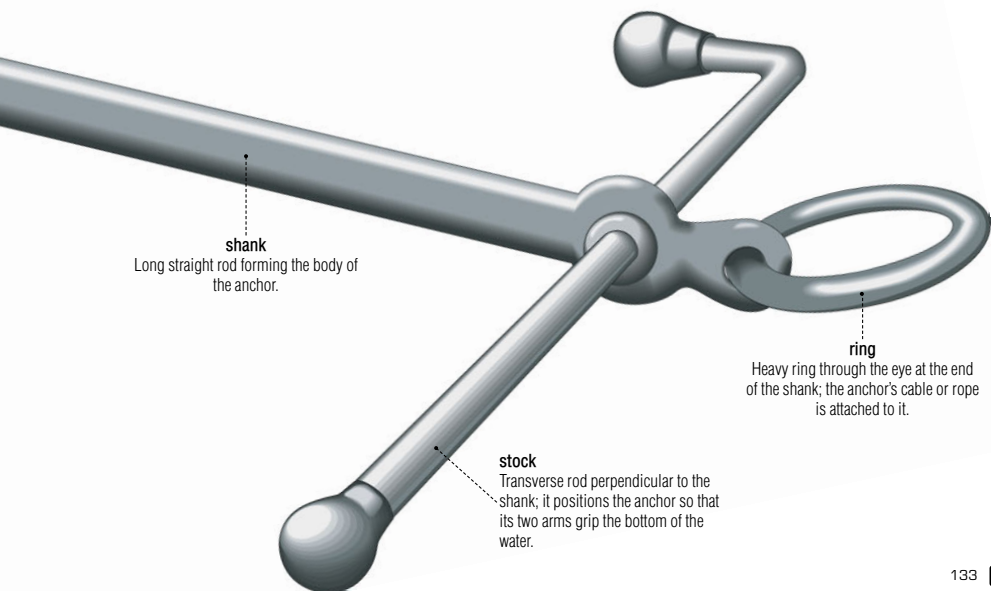
Relatively heavy and bulky anchor with a stock and two arms ending in palms.

**grapnel**

Small anchor with four, sometimes folding, cruciform arms.

**mushroom anchor**

Anchor with a large crown instead of arms.

**shank**

Long straight rod forming the body of the anchor.

**stock**

Transverse rod perpendicular to the shank; it positions the anchor so that its two arms grip the bottom of the water.

**ring**

Heavy ring through the eye at the end of the shank; the anchor's cable or rope is attached to it.

# life-saving equipment

Instruments and equipment for signaling a boat's presence and for saving people from drowning.

## life raft

Inflatable boat where passengers can take refuge in case of emergency.



### canopy

Covering that automatically deploys to protect against wind, rain and spray.

### boarding ladder

Nylon straps that form steps for climbing into the life raft.

### inflation system

Device containing pressurized air that automatically inflates the buoyancy tubes when the life raft is launched.

### buoyancy tube

Inflatable tube that serves as a hull to make the raft float.

## fog horn

Instrument that makes a regulation sound when visibility is reduced to indicate the presence of a boat.



### trumpet

Bell mouth that amplifies the sound emitted by a diaphragm when compressed air passes over it.

### canister

Small container of compressed air.

## antenna

Metal rod that emits the radio signal into the atmosphere.

## distress beacon

Device that automatically transmits a radio distress signal giving its precise position.



### strobe

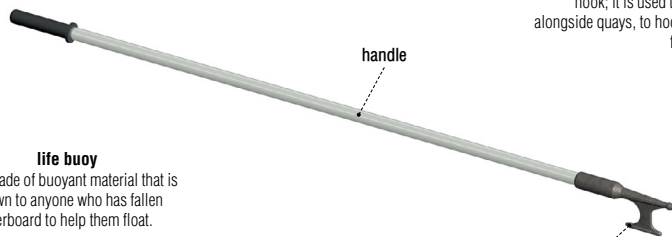
Lamp that produces an intense light from a gas, which glows between two electrodes.

**life jacket**

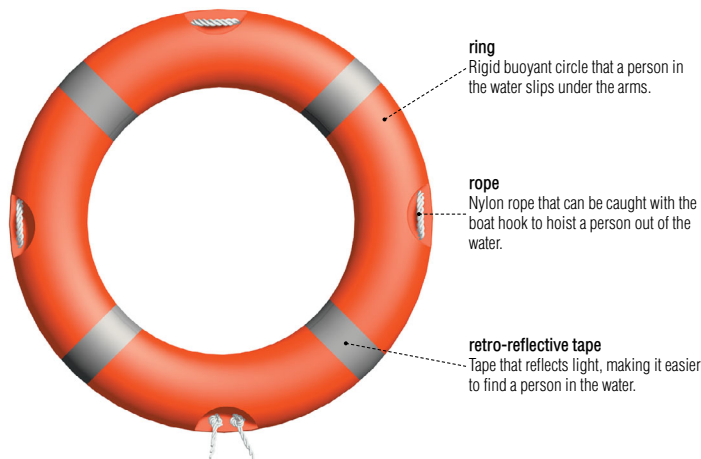
Buoyant vest filled with air or plastic foam that is used to keep a person afloat.

**boat hook**

Usually telescopic pole with a tip and a hook; it is used to maneuver a boat alongside quays, to hook an object and to fathom the bottom.

**life buoy**

Ring made of buoyant material that is thrown to anyone who has fallen overboard to help them float.

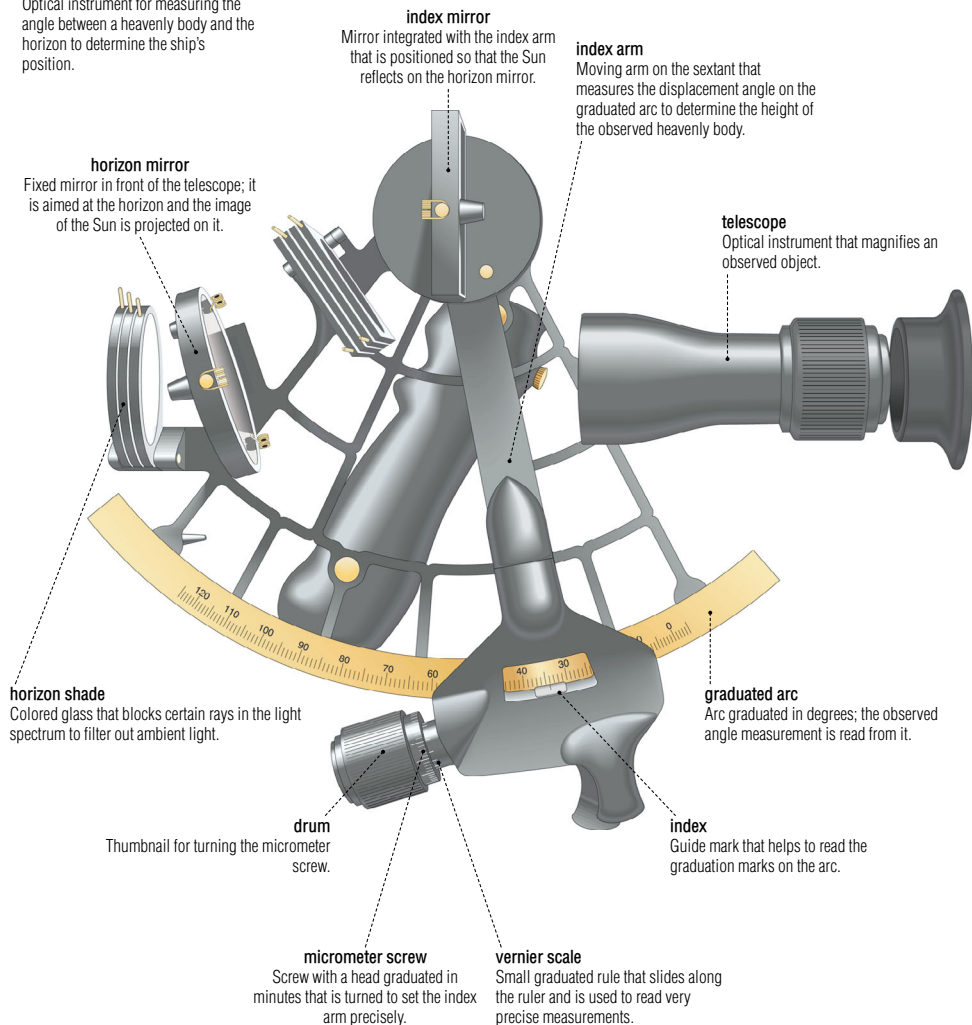


## navigation devices

Examples of instruments that are used on a ship to determine its position and to chart and stay a course.

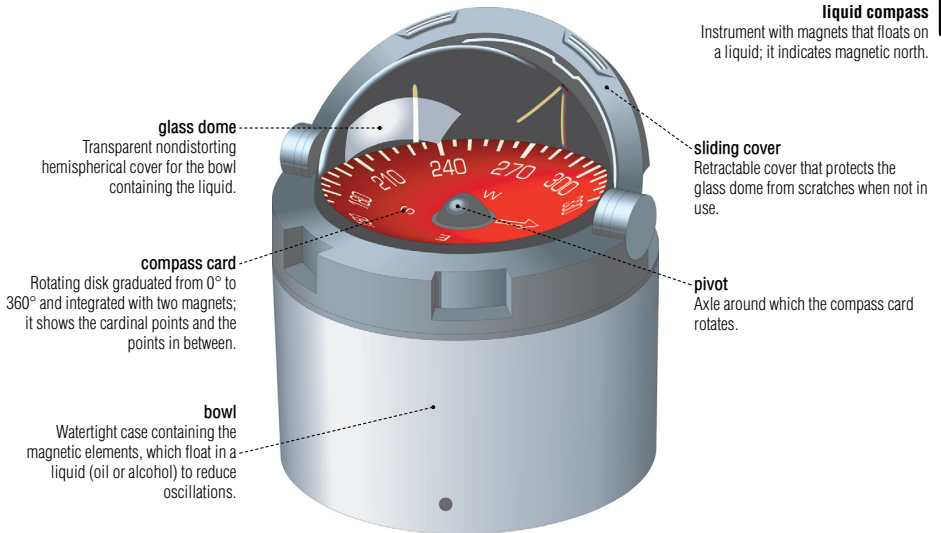
### sextant

Optical instrument for measuring the angle between a heavenly body and the horizon to determine the ship's position.

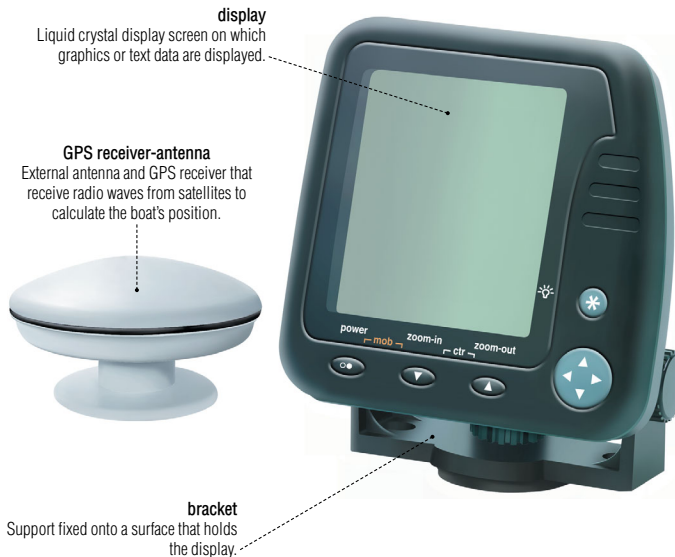


**liquid compass**

Instrument with magnets that floats on a liquid; it indicates magnetic north.

**satellite navigation system**

Device that uses radio signals transmitted by a network of satellites to plot a boat's position and course on a chart.

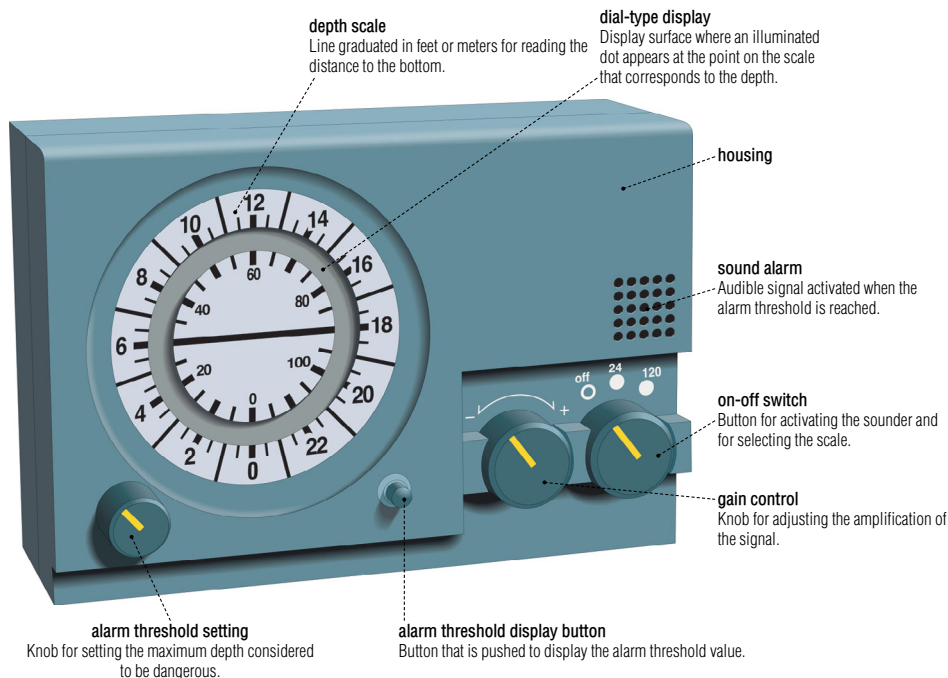




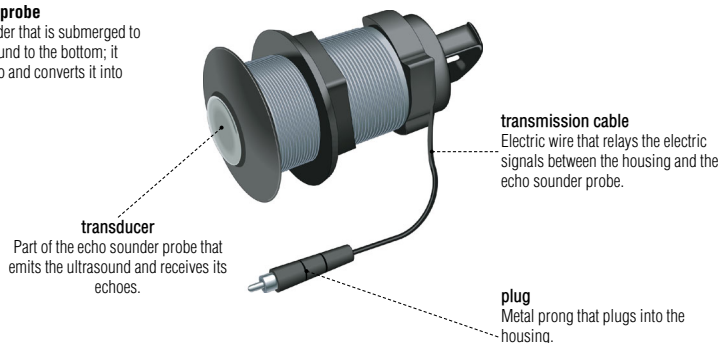
## navigation devices

**echo sounder**

Device that uses ultrasound to measure the depth of the water below the boat.

**echo sounder probe**

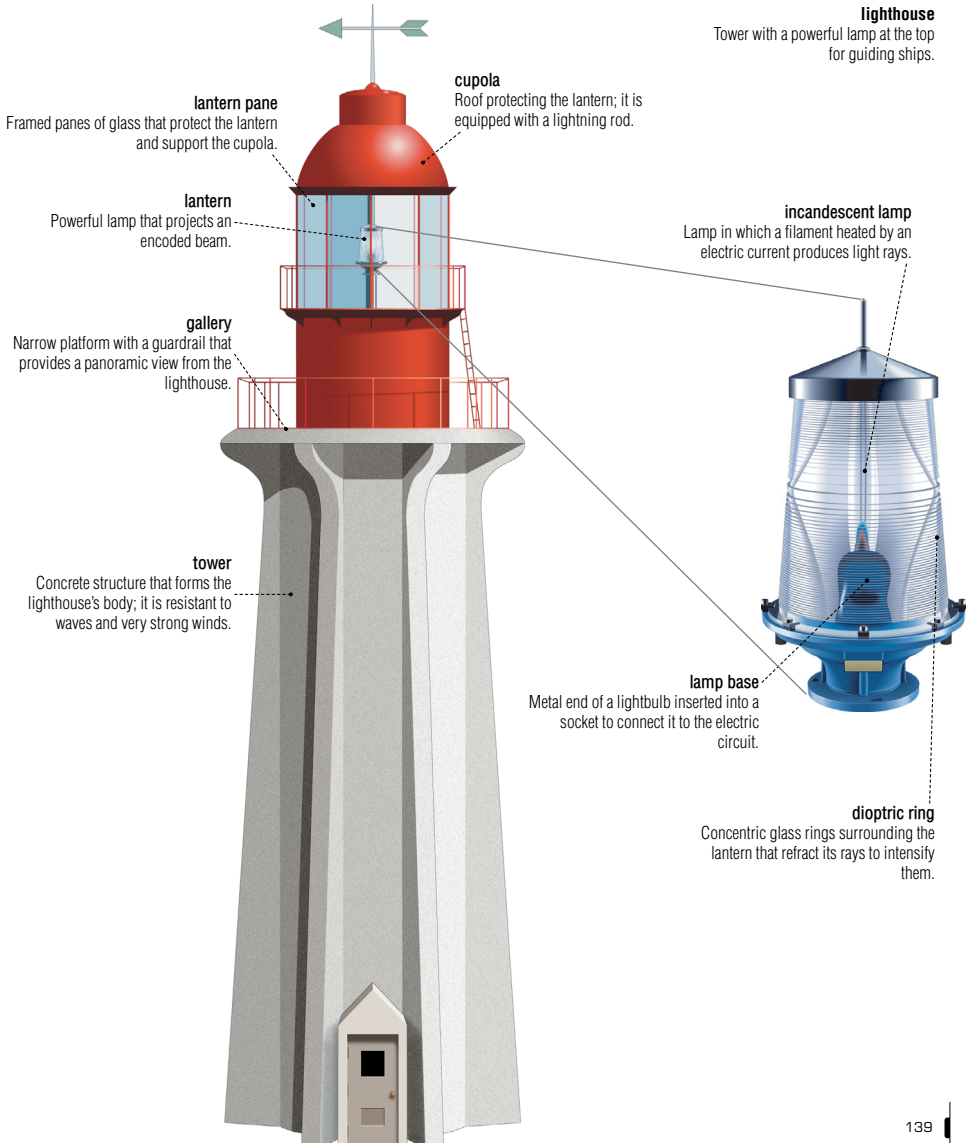
Part of the sounder that is submerged to send the ultrasound to the bottom; it receives the echo and converts it into sound.



Beacons and devices located on the sea, coasts and waterways that emit light, sound and radio waves to aid navigation.

**lighthouse**

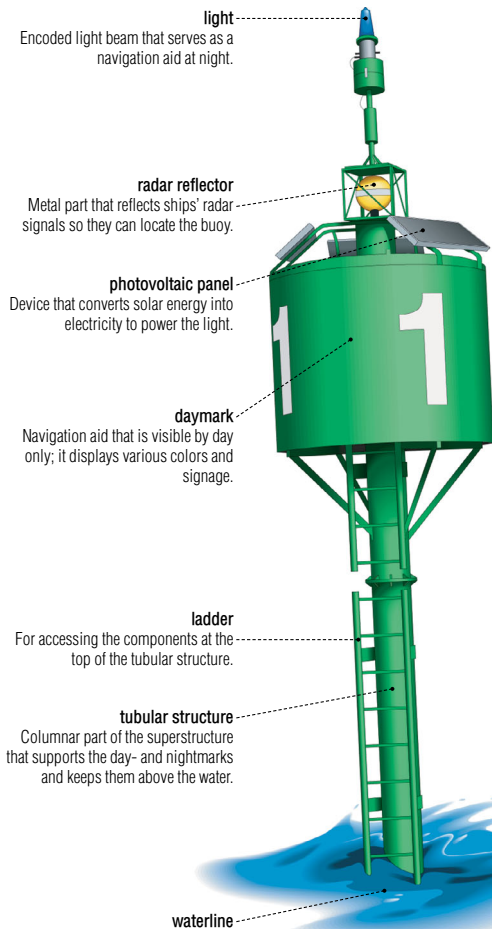
Tower with a powerful lamp at the top for guiding ships.



## maritime signals

**high focal plane buoy**

Floating beacon whose light is especially high above the surface of the water.

**pillar buoy**

Floating beacon with a pylon-shaped superstructure.

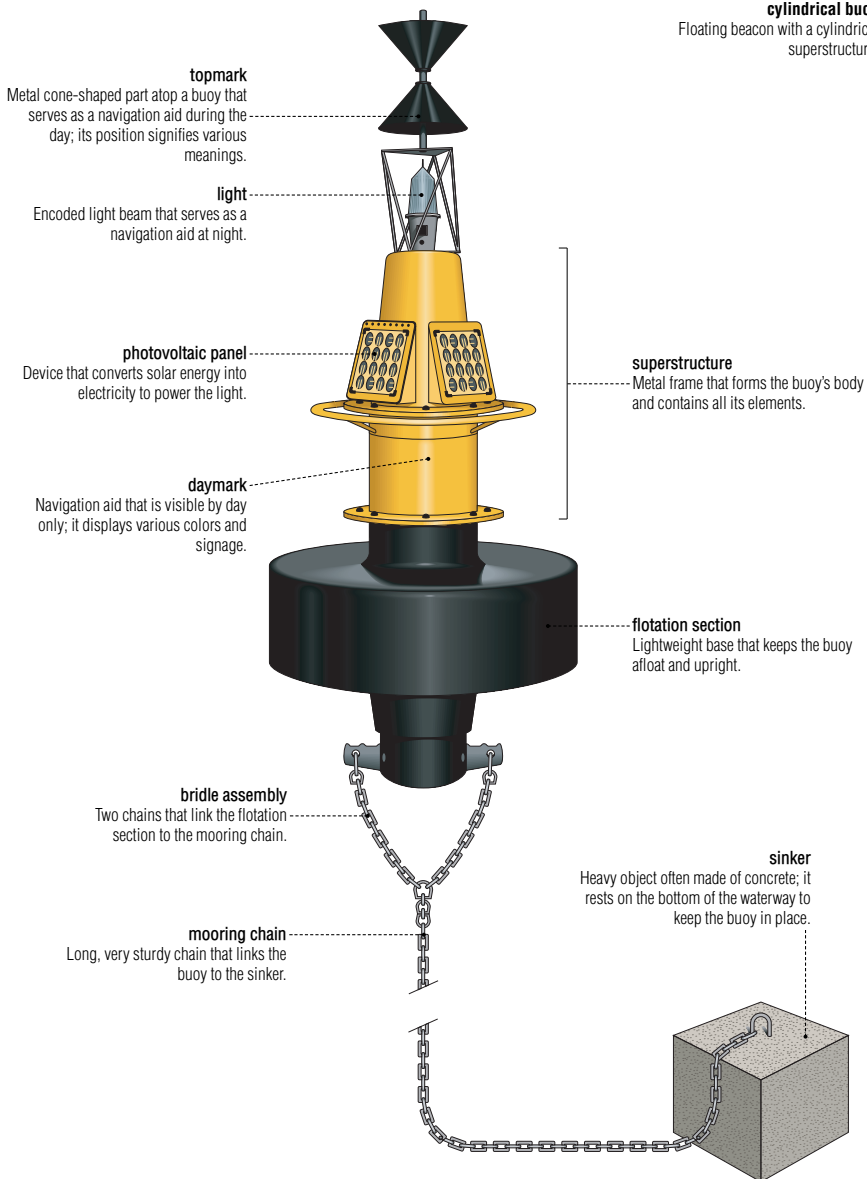
**conical buoy**

Floating beacon with a cone-shaped superstructure.



**cylindrical buoy**

Floating beacon with a cylindrical superstructure.

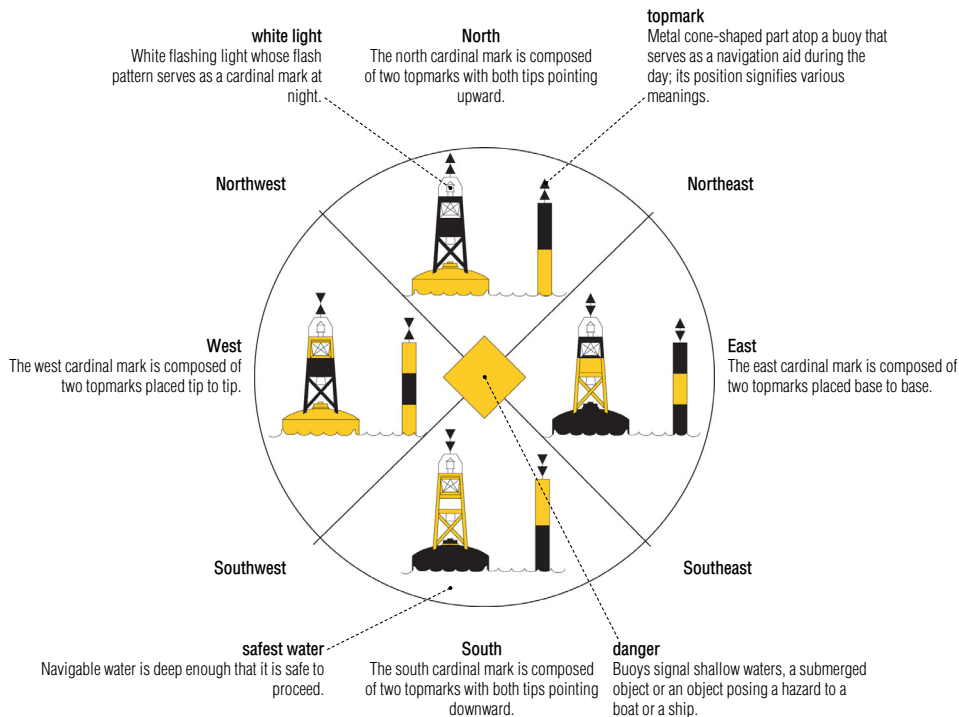


# maritime buoyage system

Buoys, beacons and lights located along coasts and waterways to guide ships and boats.

## cardinal marks

Buoys of standardized colors, topmarks and lights whose placement alone or in a pattern corresponds to the divisions of a compass.

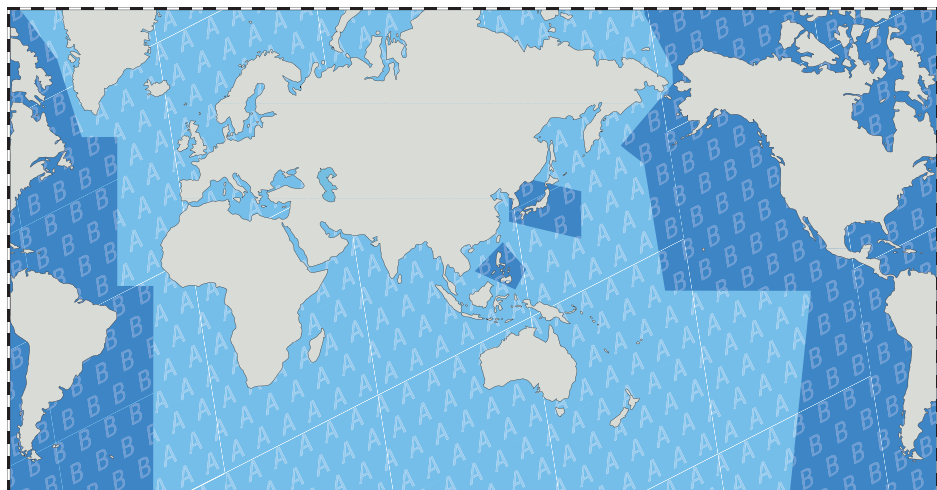
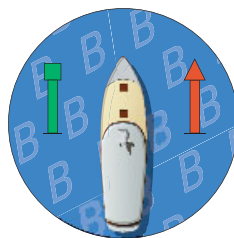
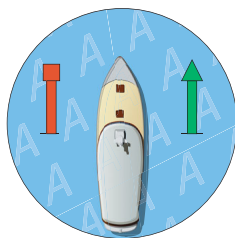


**buoyage regions**

The color of the buoys that indicate starboard and port is the opposite in various parts of the world.

**port hand**  
Left side of the ship when looking forward.

**starboard hand**  
Right side of the ship when looking forward.

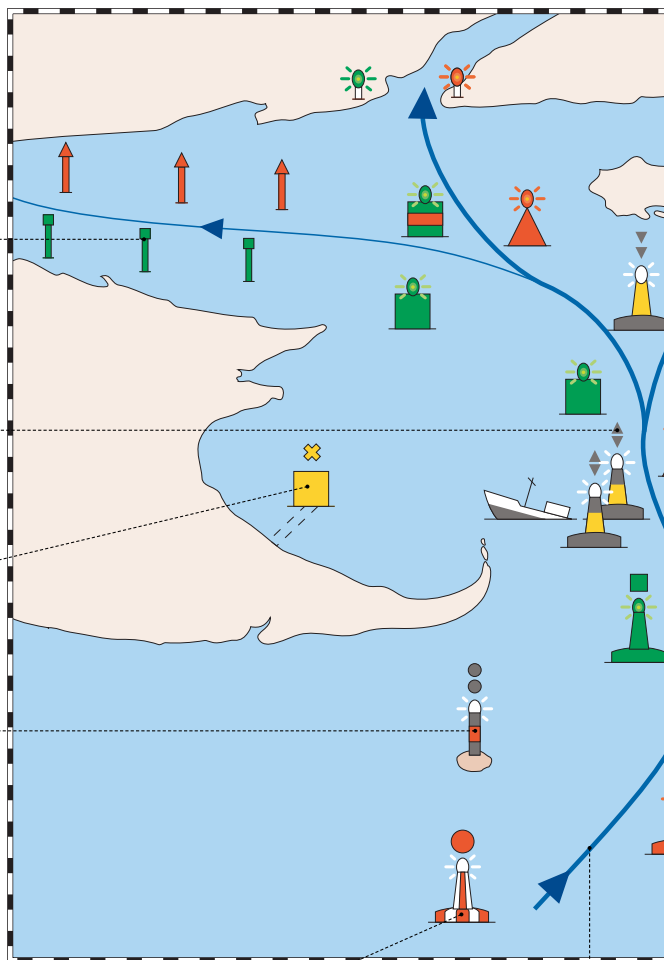


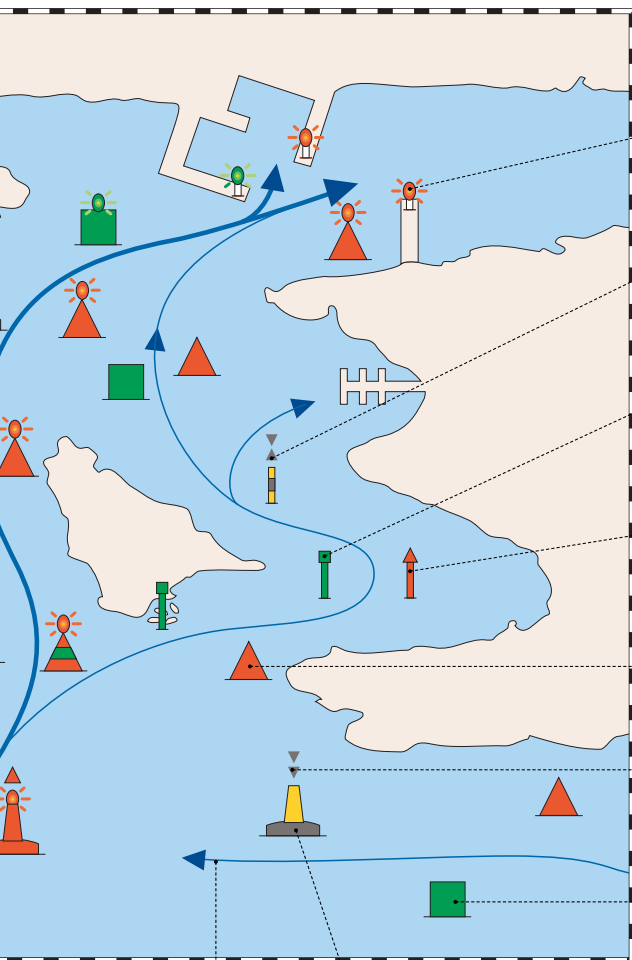
## maritime buoyage system

**daymarks (region B)**

System B combines lateral and cardinal marks. It is the opposite of system A, in which starboard marks are red and port marks are green.

- spar buoy**  
Long tubular buoy used in harbors and in waters that have no tides.
- East cardinal mark**  
Buoy with two base-to-base topmarks that is placed to the east of a danger zone.
- special mark**  
Buoy marking an area that is regulated for a specific use (such as military exercises or fishing) or contains submerged obstacles (such as cables or pipelines).
- isolated danger mark**  
Buoy marking an isolated danger zone beyond which the waters are navigable.
- safe water mark**  
Buoy signaling that the water is navigable.
- preferred channel**  
Navigation lane with beacons; it is the shortest and safest way to a harbor or for navigating near a coast or through a waterway.



**light**

Encoded light beam that serves as a navigation aid at night.

**West cardinal mark**

Buoy with two point-to-point topmarks that is placed to the west of a danger zone.

**port hand**

Mark the ship must keep on the left side of its prow as it navigates a channel.

**starboard hand**

Mark the ship must keep on the right side of its prow as it navigates a channel.

**conical buoy**

Floating beacon with a cone-shaped superstructure.

**South cardinal mark**

Buoy with two topmarks pointing downward that is placed to the south of a danger zone.

**lateral mark**

Red or green buoy that indicates the port or starboard limits of the channel.

**secondary channel**

Navigation lane with beacons that is longer or more difficult than the preferred channel.

**pillar buoy**

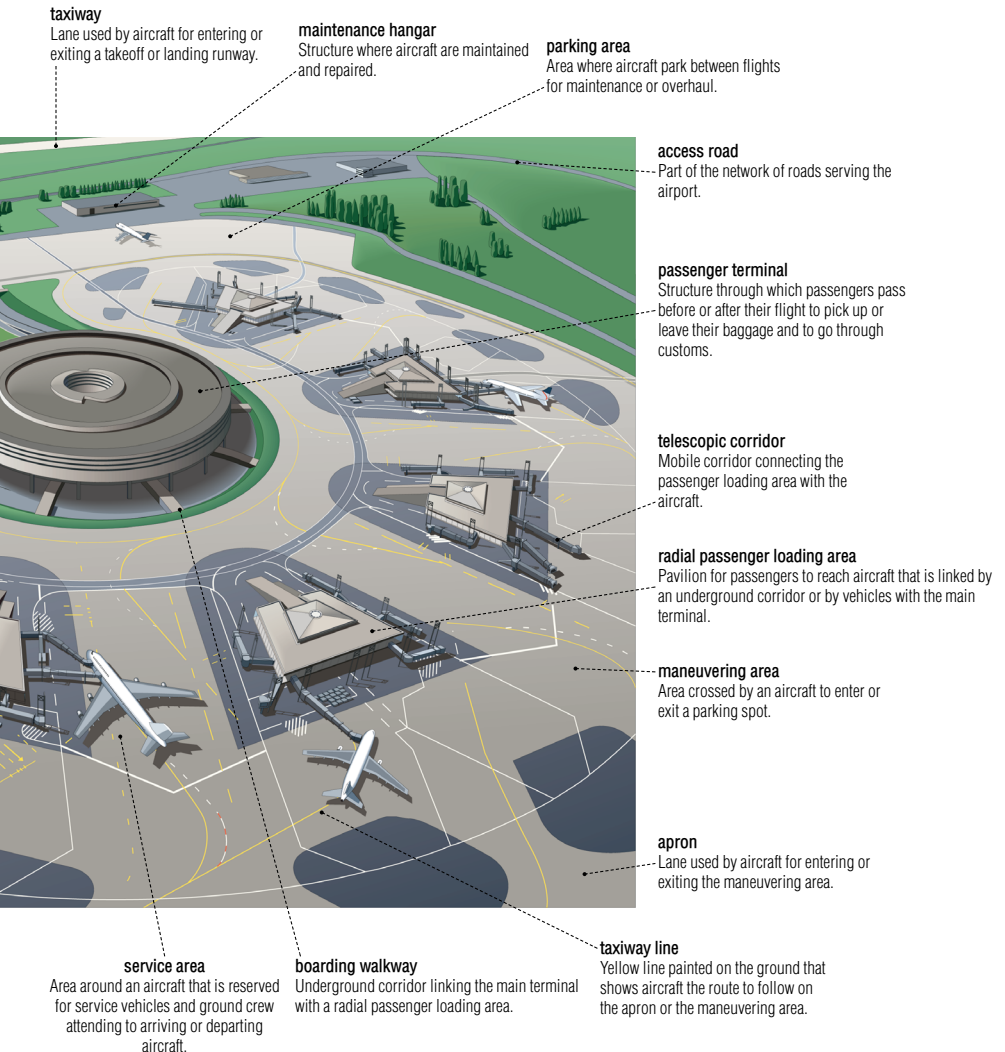
Floating beacon with a pylon-shaped superstructure.



# airport

Location that contains all the technical and commercial facilities needed to support air traffic.





## airport

**passenger terminal**

Structure through which passengers pass before or after their flight to pick up or leave their baggage and to go through customs.

**lobby**

Large entrance hall of the terminal for passengers and the people accompanying them.

**automatically controlled door**

Door automatically opening and closing for people to go through.

**ticket counter**

Desk where an airline or travel agent sells tickets for flights.

**baggage claim area**

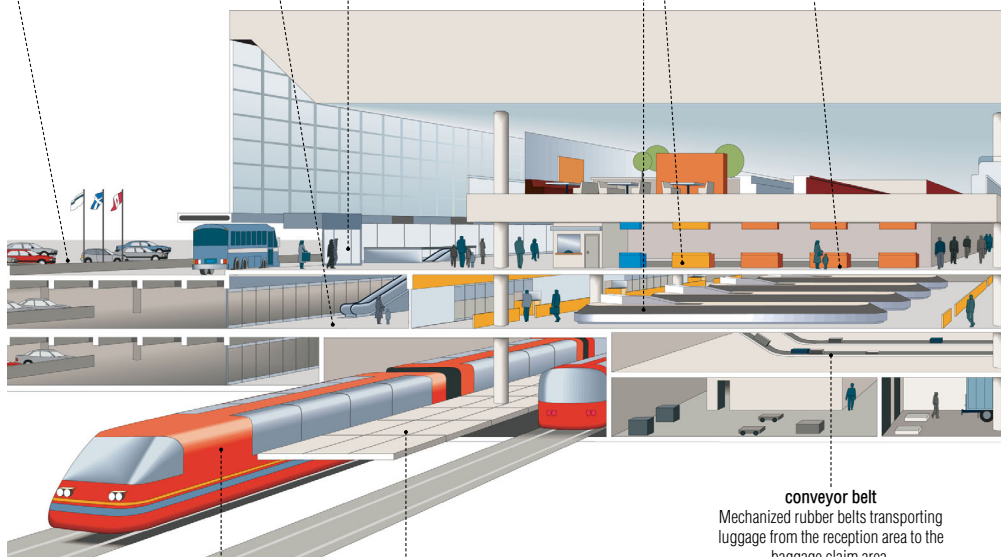
Area where the baggage conveyor belt emerges for passengers to pick up their luggage.

**baggage check-in counter**

Desk where an employee checks and weighs passengers' baggage and issues boarding passes.

**parking lot**

Area for parking vehicles.

**railroad shuttle service**

Train that runs frequently between the terminal and the city or the nearest station.

**platform**

Area bordering the track for passengers to enter or exit the railroad shuttle service.

**conveyor belt**

Mechanized rubber belts transporting luggage from the reception area to the baggage claim area.

**security check**

Mandatory checkpoint for passengers before boarding where their identification and luggage are inspected.

**observation deck**

Mezzanine that is open to the public and overlooks the departure and arrival area and the runways.

**passport control**

Booth where passengers show their passports before entering or leaving the boarding room.

**duty-free shop**

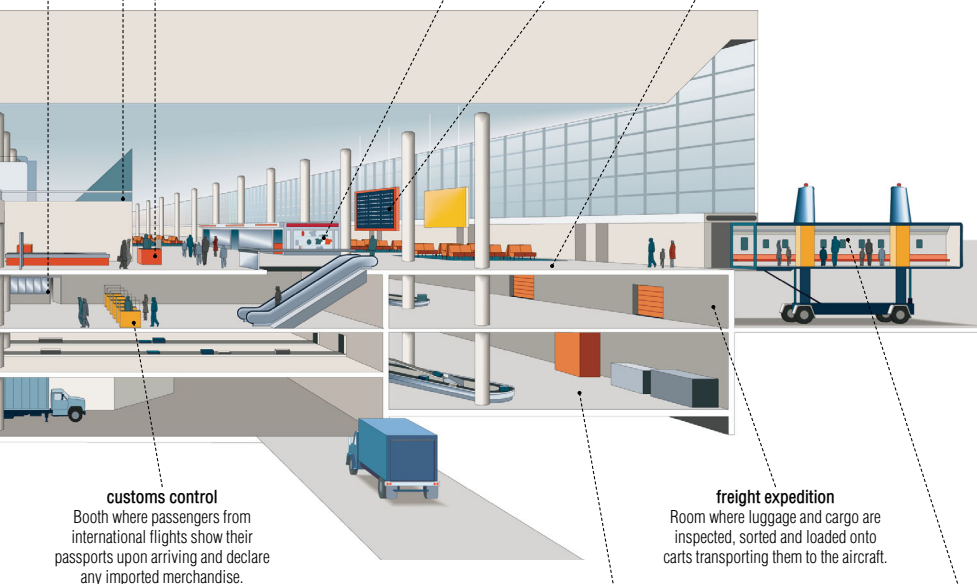
Store located near the boarding room where tax-free goods are sold (e.g., perfume, alcohol, leather goods).

**flight information board**

Panel listing and updating all the airport's arrivals and departures as well as the flight departure gate numbers.

**boarding room**

Room where passengers wait before boarding.

**customs control**

Booth where passengers from international flights show their passports upon arriving and declare any imported merchandise.

**freight expedition**

Room where luggage and cargo are inspected, sorted and loaded onto carts transporting them to the aircraft.

**freight reception**

Room where luggage and cargo that have been unloaded from the cargo hold are transferred to the conveyor belt, which in turn moves them to the baggage claim area.

**passenger transfer vehicle**

Vertically adjustable vehicle with a cabin for transporting passengers between the aircraft and the terminal.

## airport

### runway

Strip of land on which an aircraft speeds up before takeoff or brakes after landing.

### runway center line markings

Wide broken white line that shows the center of the runway.

### holding area marking

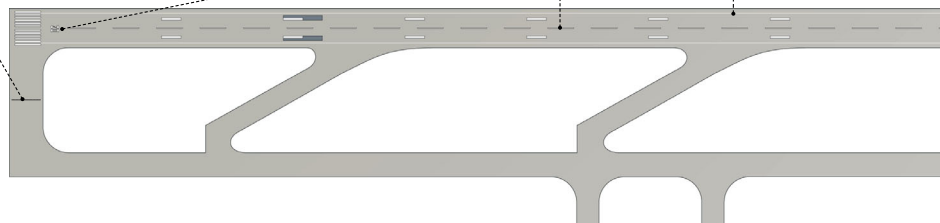
Line that shows an aircraft where to wait for clearance from the control tower before entering the runway for takeoff.

### runway designation marking

Number that, when multiplied by 10, shows the runway's position in relation to magnetic north.

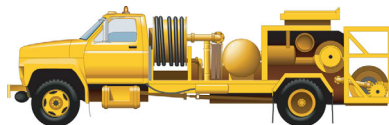
### runway side stripe markings

Wide solid white line that marks the edges of the runway.



## ground airport equipment

Equipment and materials for preparing an aircraft for its next flight; this includes cleaning, performing checks, refueling and boarding.



### air start unit

Vehicle that is equipped with an air compressor driven by a gas turbine; it pumps air into the aircraft's jet engines to start them.



### jet refueler

Truck that pumps fuel from underground tanks into the aircraft's tanks.



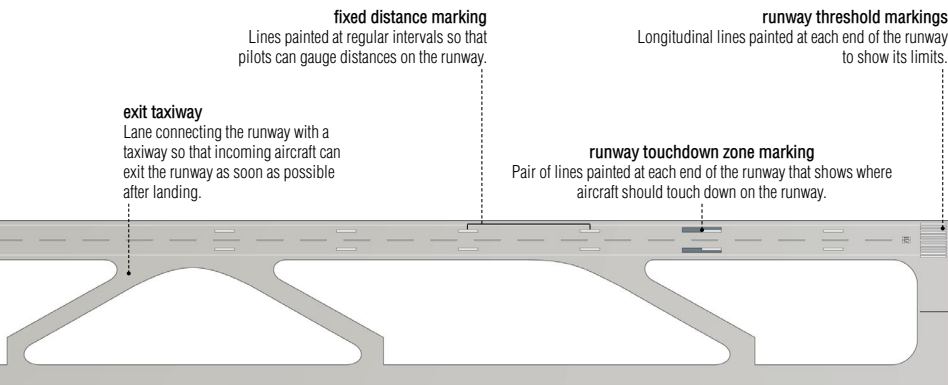
### potable water truck

Truck that fills the aircraft's water tanks with drinking water.

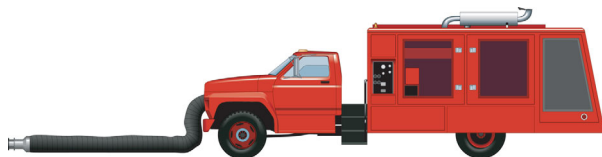


### electrical power unit

Vehicle that is equipped with a transformer to provide electricity to the aircraft when its auxiliary generator set is at rest.

**lavatory truck**

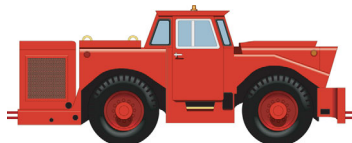
Truck that empties and cleans the aircraft's toilets.

**ground air conditioner**

Truck that contains a device for treating the aircraft's interior air (ventilation and cooling or heating) when the aircraft is at rest.

**tow bar**

Device that connects the tow tractor to the aircraft's front landing gear.

**tow tractor**

Very heavy vehicle that pulls or pushes an aircraft onto the maneuvering area or the parking area.

**wheel chock**

Object that is placed against the landing gear's wheels to keep the aircraft stationary when on the ground.

**universal step**

Mobile staircase that is positioned manually at an aircraft door to allow passengers to enter or exit.

**tripod tail support**

Adjustable tripod that supports part of the aircraft (the tail or a wing) when maintenance or repairs are carried out.

**aircraft maintenance truck**

Vehicle that is used by technical maintenance crew when servicing an aircraft.

**container/pallet loader**

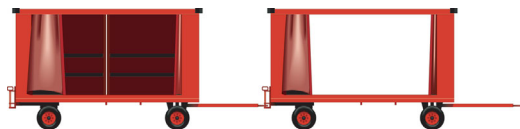
Vehicle whose articulated arms raise and lower a level platform for loading and unloading heavy cargo such as containers and cargo on pallets.

**mobile passenger stairs**

Truck that carries a telescopic staircase, which is positioned at an aircraft door to allow passengers to enter or exit.

**boom truck**

Vehicle that is equipped with a bucket at the end of an articulating pivoting arm; technicians stand in it to work on aircraft.

**baggage trailer**

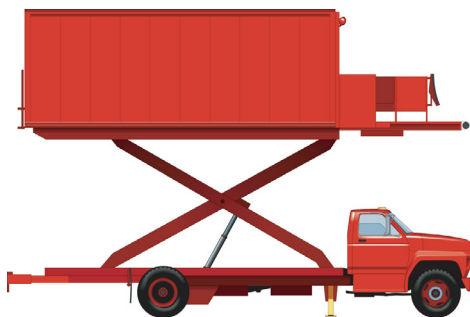
Flat trailer or cart that carries containers in which baggage is transported from the terminal to the aircraft.

**tow tractor**

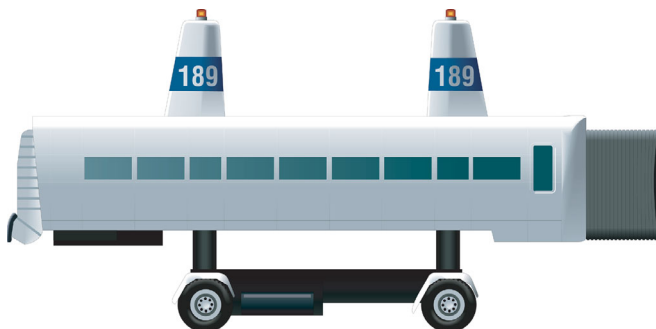
Vehicle that pulls the baggage trailer.

**baggage conveyor**

Conveyor belt of adjustable height for loading and unloading baggage and cargo.

**catering vehicle**

Truck whose box can be lifted up to the aircraft; it delivers the food and drink to be served to passengers.

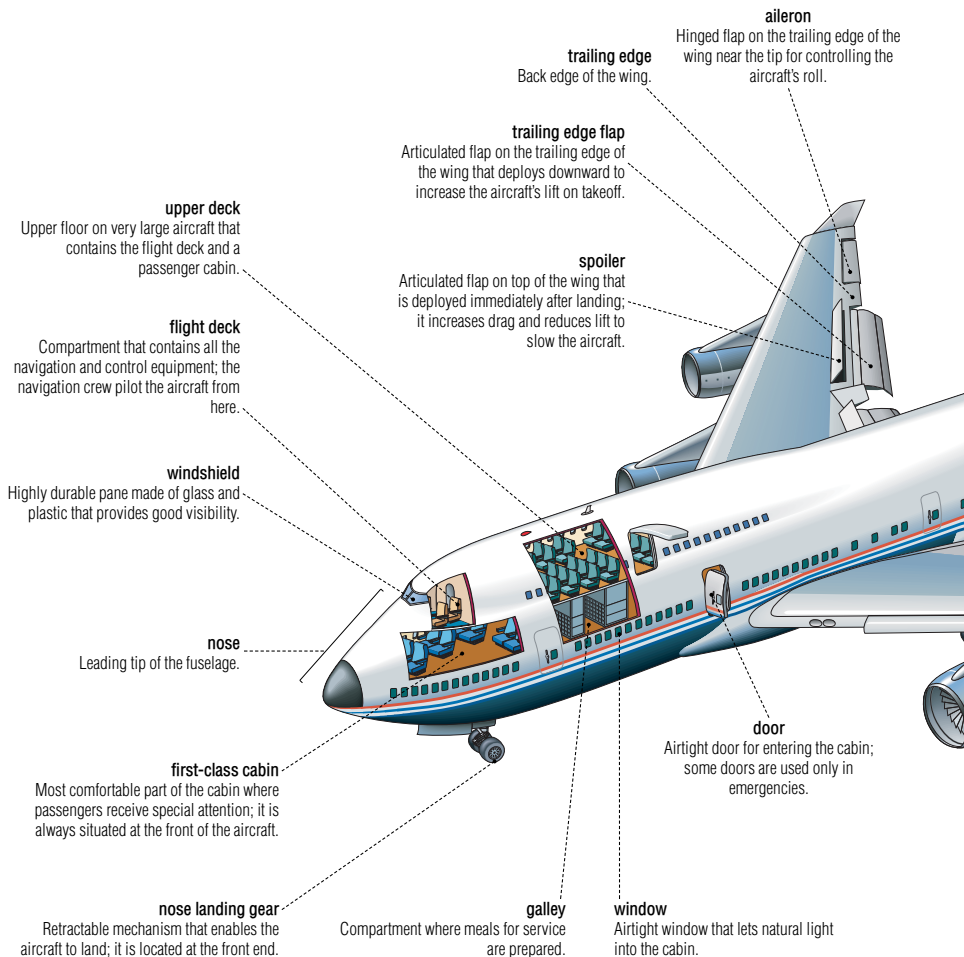
**passenger transfer vehicle**

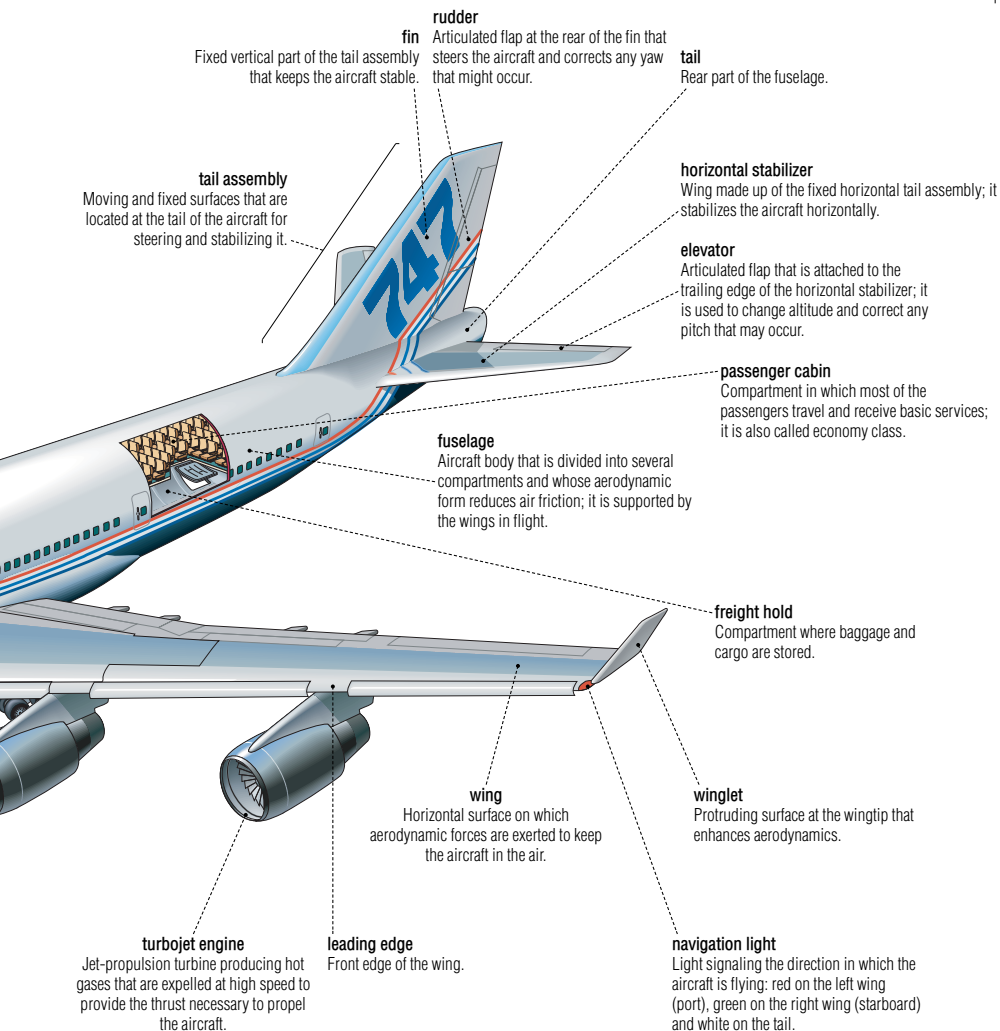
Vertically adjustable vehicle with a cabin for transporting passengers between the aircraft and the terminal.



## long-range jet

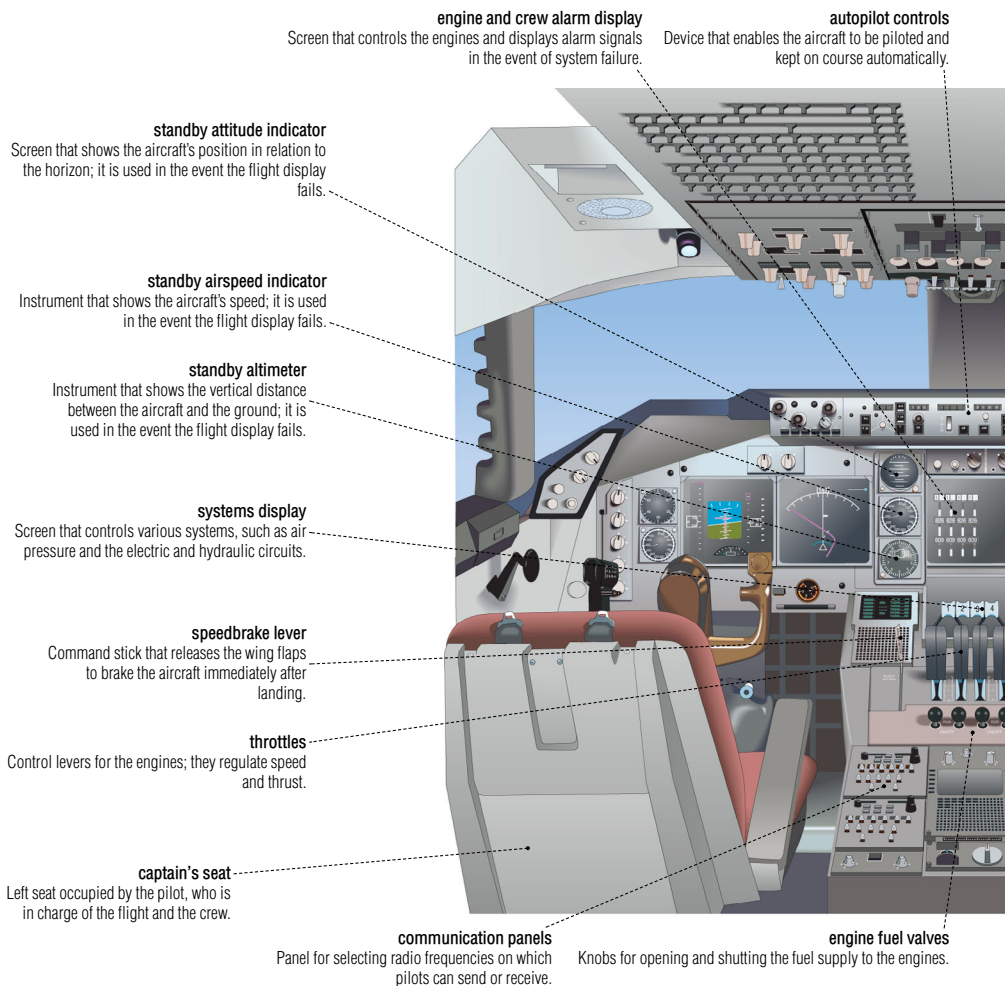
Aircraft that transports passengers and cargo traveling long distances at high altitudes (between 30,000 and 40,000 ft).

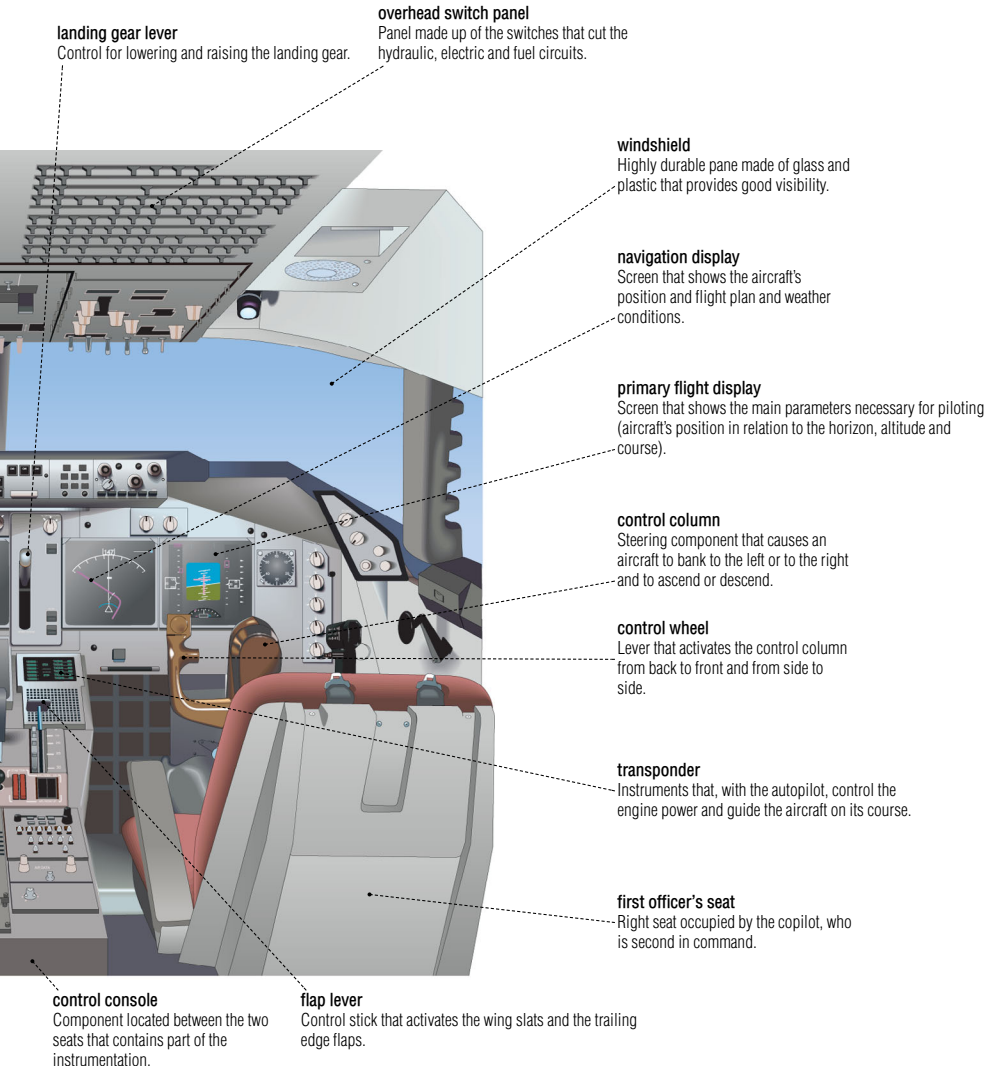




## flight deck

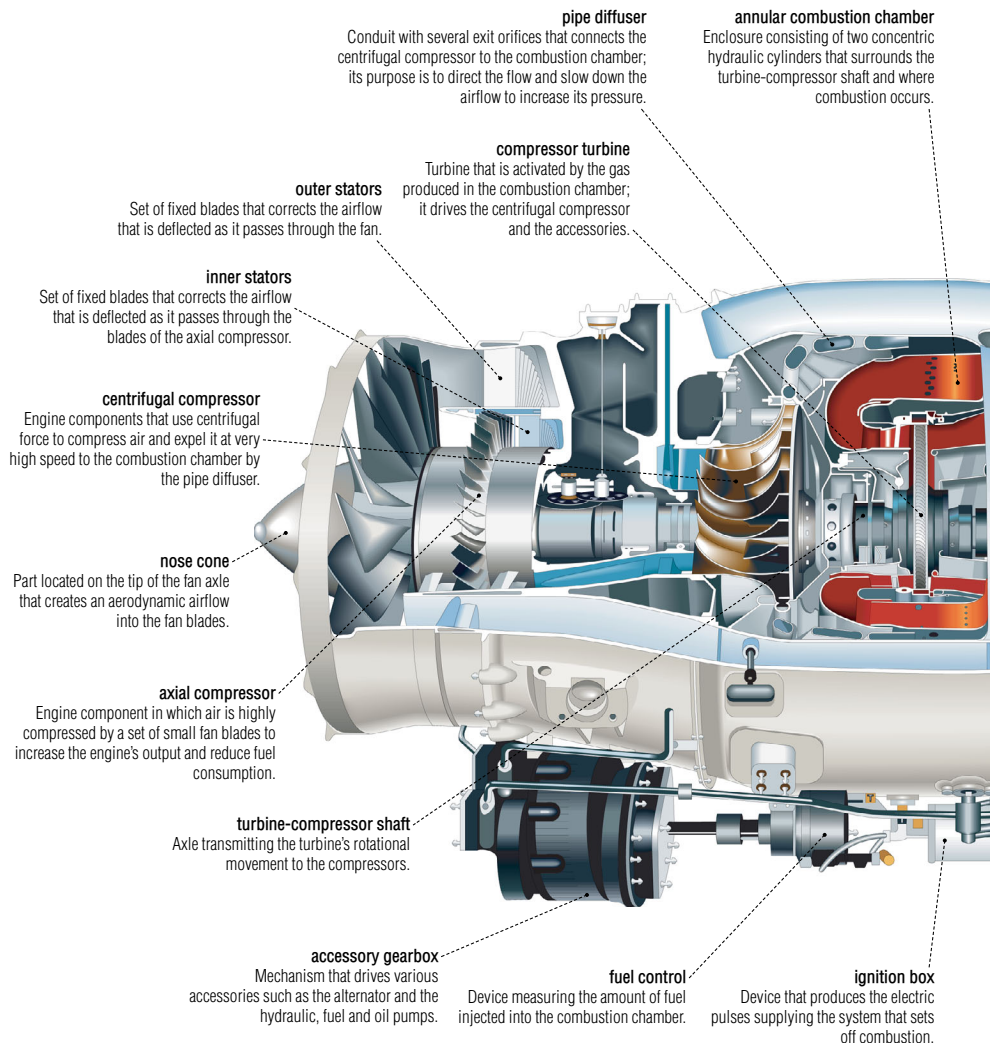
Compartment that contains navigation equipment and controls and from which the crew pilots the aircraft.





# turbofan engine

Jet engine with a fan and two airflows; one airflow passes through the combustion chamber and the other bypasses it.



**power turbine**

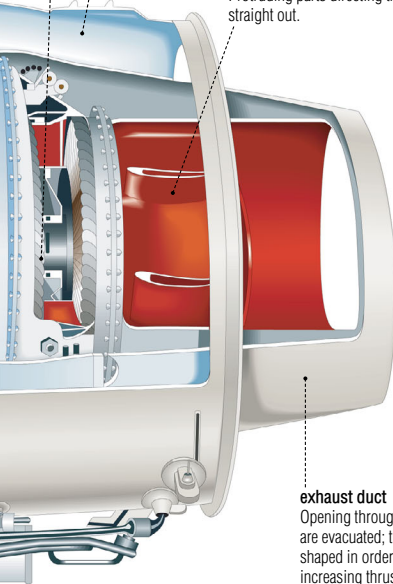
Turbine that is driven by the gases expelled by the combustion chamber; it drives the axial compressor and the fan. It is independent of the compressor turbine.

**bypass duct**

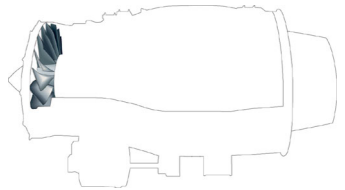
Channel that conducts some of the air sucked in by the fan, which contributes to the engine's thrust.

**exhaust guide vanes**

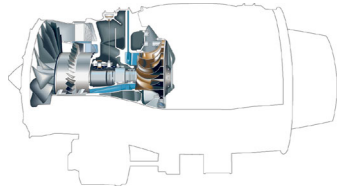
Protruding parts directing the exhaust gases straight out.

**fan**

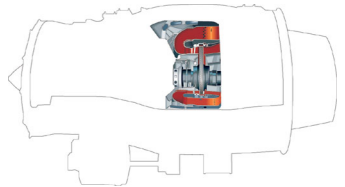
Blower sucking air into the turbofan engine.

**compression**

Phase during which some of the air flowing through the engine is compressed before it enters the combustion chamber.

**combustion**

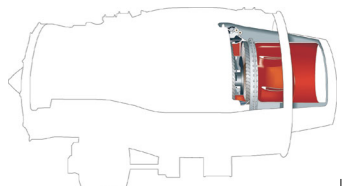
Phase during which the compressed air enters the combustion chamber, where it is mixed with fuel and ignited.

**exhaust duct**

Opening through which the exhaust gases are evacuated; the duct is usually cone-shaped in order to narrow the gas flow, thus increasing thrust.

**exhaust**

Phase during which the air expands and produces a thrust that activates the turbines and propels the turbofan engine.

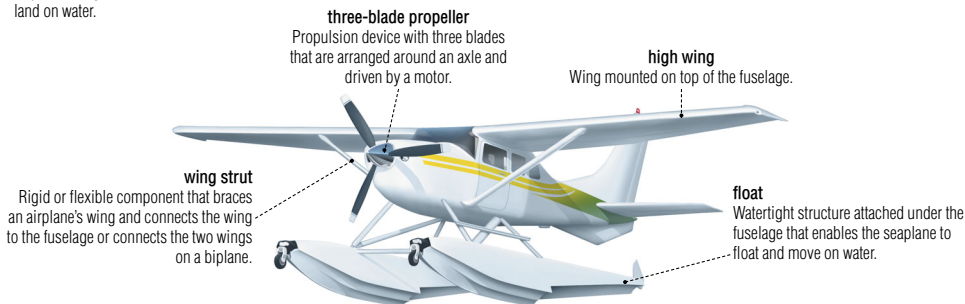


## examples of airplanes

Ever since the first airplane, Éole, in 1890, the shape of aircraft has evolved constantly as new aerodynamic discoveries were made and engine power increased.

### float seaplane

Airplane designed to take off from and land on water.



### biplane

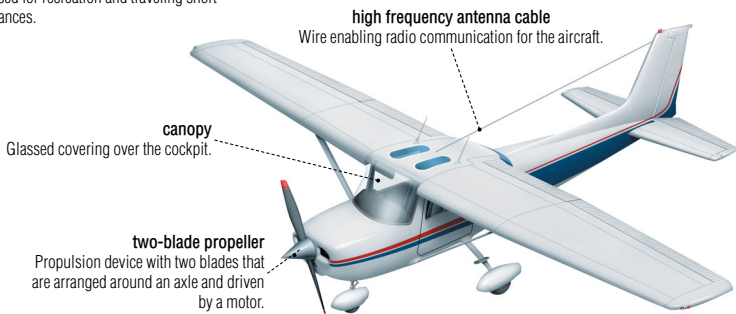
Airplane with two superimposed and parallel sets of wings.

**wings**  
Surfaces upon which aerodynamic forces are exerted to cause the airplane to fly.



### light aircraft

Airplane that usually has a single engine and cruises between 90 and 150 mph; it is used for recreation and traveling short distances.



**supersonic jetliner**

Passenger aircraft whose cruising speed (1500 mph) is faster than the speed of sound (761 mph). The Concorde was the best known commercial aircraft of this type.

**variable ejector nozzle**

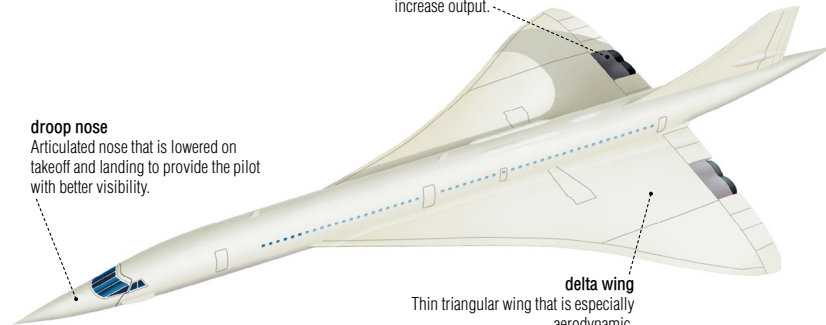
Duct whose mouth widens as the plane climbs, thus enabling the engines to increase output.

**droop nose**

Articulated nose that is lowered on takeoff and landing to provide the pilot with better visibility.

**delta wing**

Thin triangular wing that is especially aerodynamic.

**amphibious fire-fighting aircraft**

Airplane with large water tanks; it is used to fight forest fires.

**three-blade propeller**

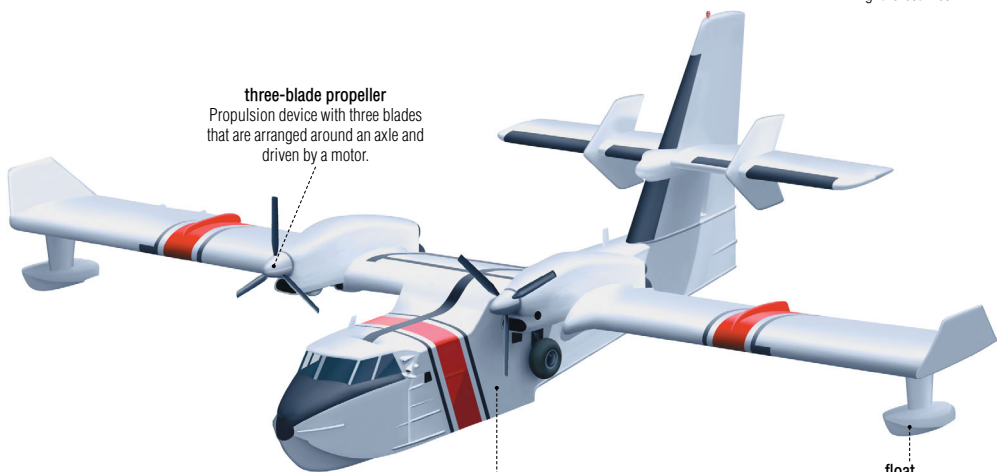
Propulsion device with three blades that are arranged around an axle and driven by a motor.

**water-tank area**

Area with a hatch that scoops up water from the surface of a body of water to fill its tanks so that it can dump the water in flight.

**float**

Watertight structure that prevents the airplane from tipping when it fills its tanks.





## examples of airplanes

**business aircraft**

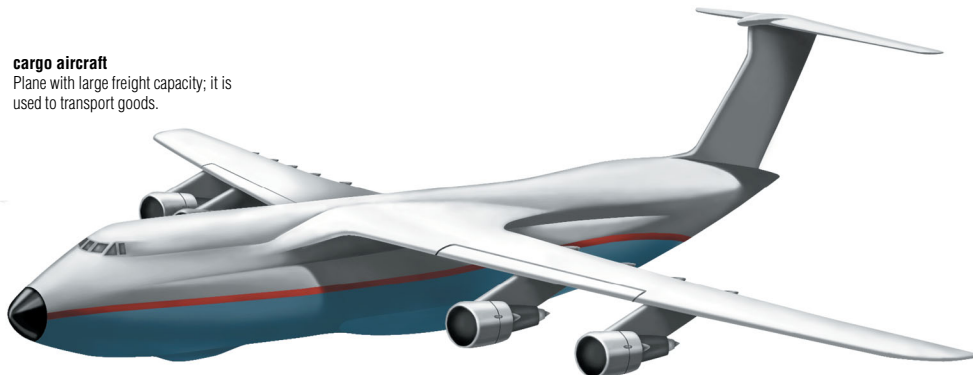
Airplane with a limited number of seats; it is usually used by heads of corporations for business trips.

**winglet**

Protruding surface at the wingtip that enhances aerodynamics.

**cargo aircraft**

Plane with large freight capacity; it is used to transport goods.

**superjumbo jet**

Airplane that can transport a large number of passengers (more than 500).



**swiveling nozzle**

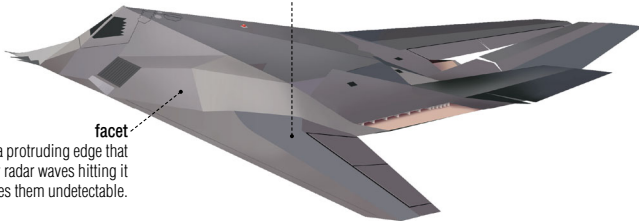
Duct that can be pointed downward to increase the engine's vertical thrust during vertical landing and takeoff.

**vertical take-off and landing aircraft**

Airplane that can move vertically in order to take off from and land on short runways; it is usually used in combat.

**radar-absorbent material**

Material that absorbs radar waves before they strike any metal part of the aircraft in order to muffle the sound of the echo.

**stealth aircraft**

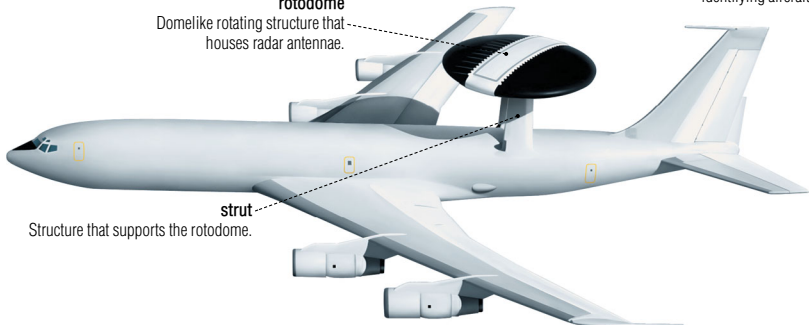
Aircraft that cannot be detected by radar because of the radar-absorbing facets covering its fuselage.

**facet**

Flat surface with a protruding edge that disperses any radar waves hitting it and makes them undetectable.

**rotodome**

Domelike rotating structure that houses radar antennae.

**strut**

Structure that supports the rotodome.

**radar aircraft**

Surveillance aircraft for locating and identifying aircraft in flight.

# combat aircraft

Military aircraft used for attack purposes.

## parachute

Device that opens from the tail of the aircraft to reduce speed on landing.

## exhaust nozzle

Conduit through which hot gases from the turbojet engine are released.

## air brake

Aerodynamic flap at the back of the aircraft; it is used to reduce speed on landing.

## turbojet engine

Jet-propulsion turbine producing hot gases that are expelled at high speed to provide the thrust necessary to propel the aircraft.

## air-to-air missile

Missile fired from a helicopter or an aircraft; its target is an aircraft or another missile.

## canopy

Glass window covering the cockpit.

## ejection seat

Seat designed to be projected from the aircraft in the event of an emergency.

## wing

Horizontal surface on which aerodynamic forces are exerted to keep the aircraft in the air.

## front landing gear

Retractable mechanism that enables the aircraft to land; it is located at the front end.

## radome

Rigid casing that radio waves can pass through; it protects the radar system.

## wing box

Metal substructure of the wings; the trailing and leading edge flaps are connected to it.

## fuel tank

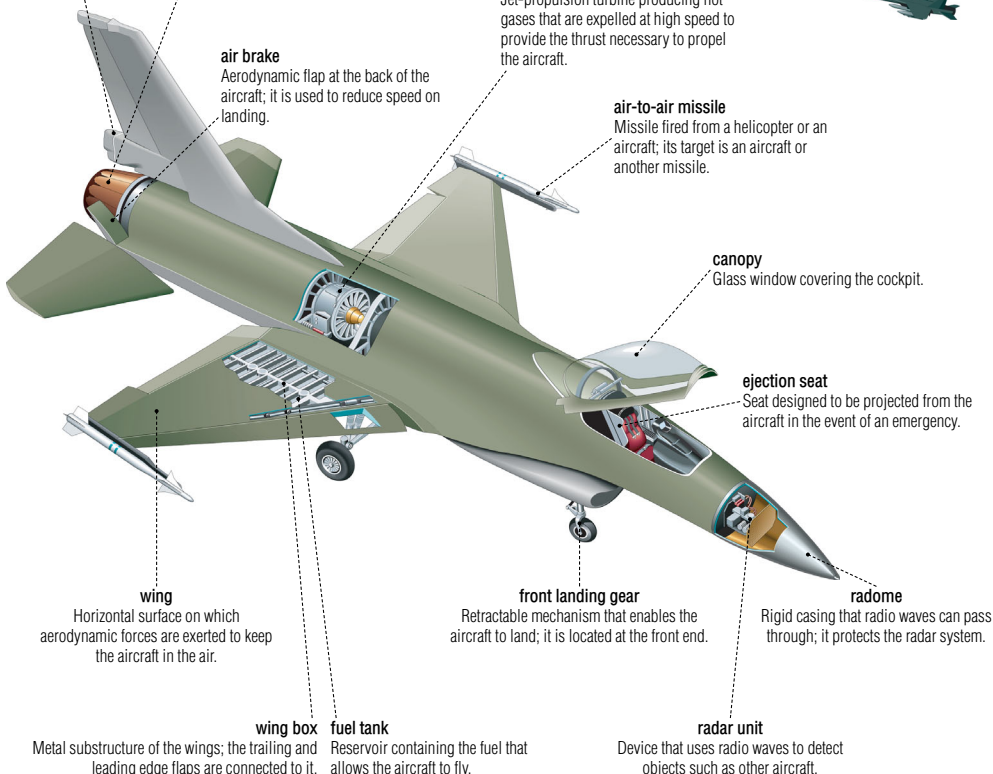
Reservoir containing the fuel that allows the aircraft to fly.

## radar unit

Device that uses radio waves to detect objects such as other aircraft.

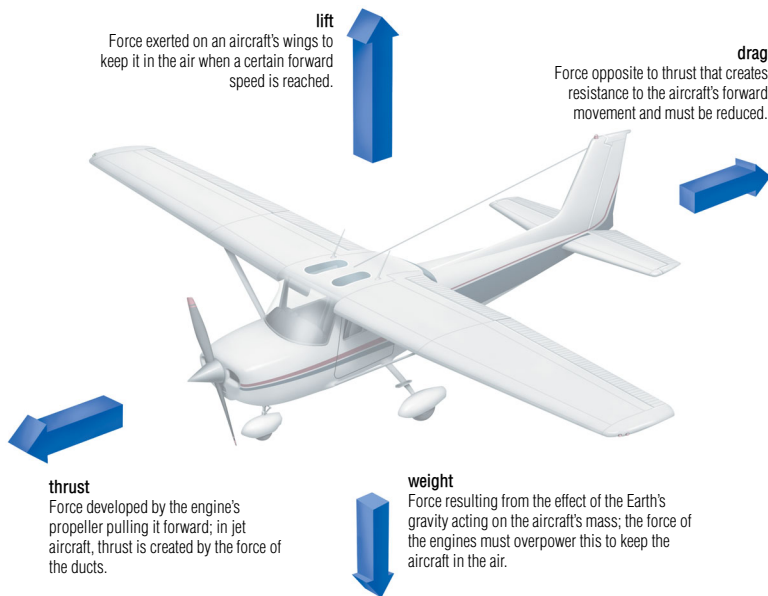
## in-flight refueling

Action of refueling a plane from a tanker in flight.



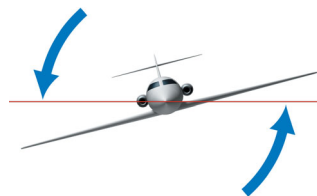
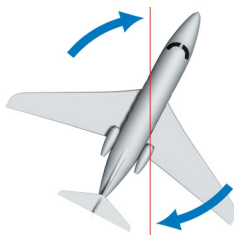
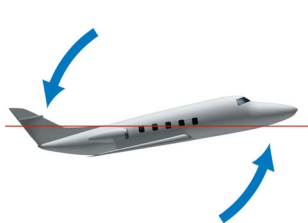
## forces acting on an airplane

Physical phenomena that affect the movement of an aircraft in flight.



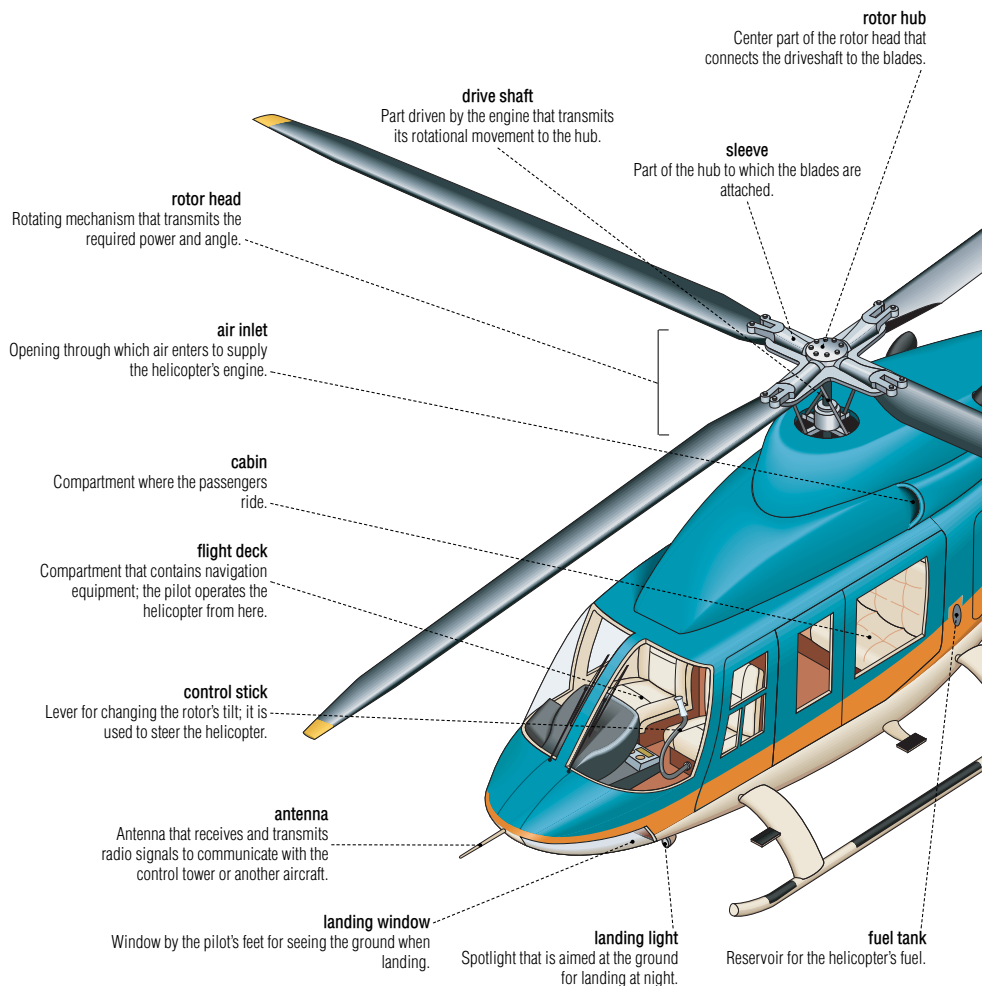
## movements of an airplane

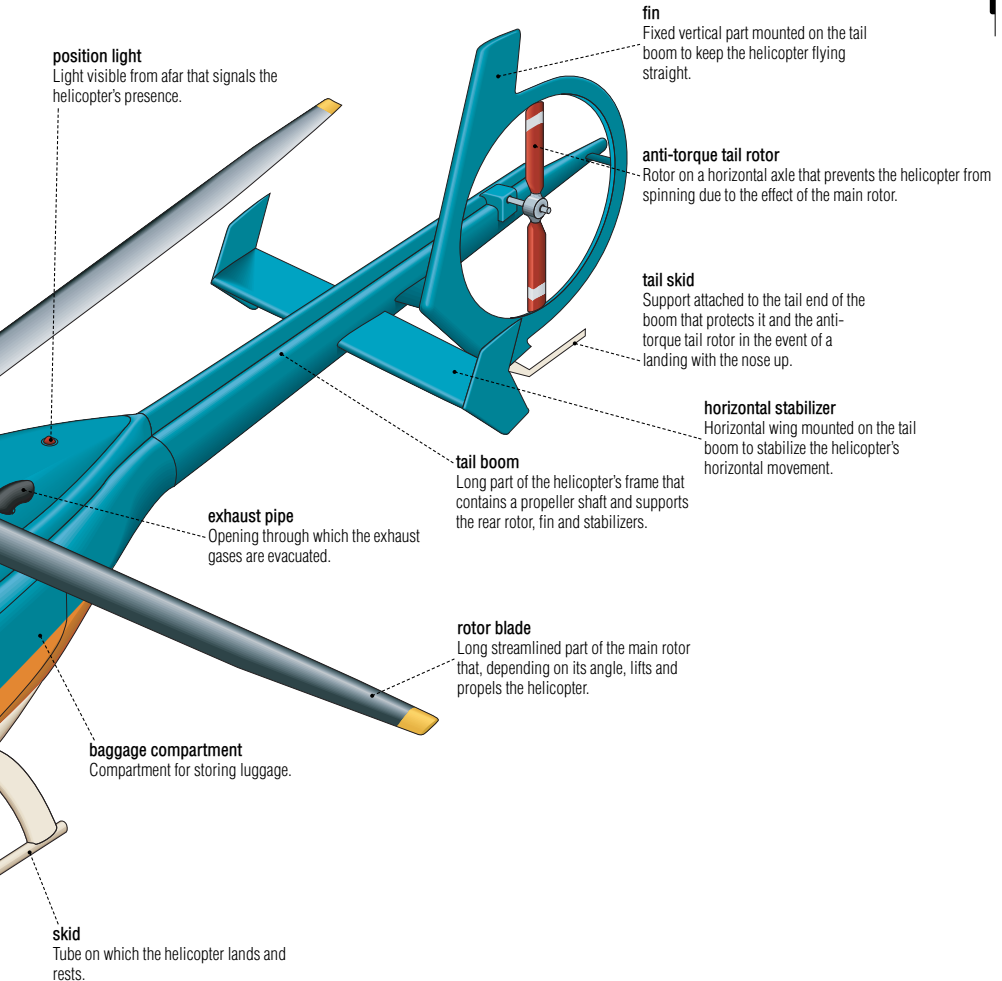
Changes exerted on an aircraft in flight that affect its behavior; a pilot must know how to correct them.



## helicopter

Aircraft whose lift agent is a rotor on a vertical axle.





## examples of helicopters

Because they can take off and land vertically, helicopters are more effective than airplanes in certain situations.

### tactical transport helicopter

Armed military helicopter for transporting troops, small combat vehicles and various objects.



### water bomber helicopter

Helicopter with a water tank that is used to fight forest fires.



#### belly tank

Tank filled with water by a long pipe hanging underneath; it uses a hatch to empty the water in flight.

### ambulance helicopter

Helicopter for transporting the sick and injured and providing medical assistance.



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